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THE FORENSIC IDENTIFICATION OF HANDWRITING:PRINCIPLES AND PRACTICE

Grundlagen und Praxis der
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INTRODUCTION

Is it at all worthwhile to write a book on the forensic identification of handwriting? In accordance with quite extensive conceptions, it is here above all a question of a mere process which to be sure may perhaps strike home a point here and there -- a process which in general need not be taken too seriously and which the administration of justice need make use of only in case of urgent necessity when other expedients do not avail -- a process which at best can be used so to speak as an accessory to other sources of evidence.

This -- may I take the liberty of calling it unjust -- view is above all based on the fact that handwriting identification has doubtless proved wanting in individual cases with respect to juristic practice, and on the fact that quite conspicuous misjudgments, caused by irrelevant opinions on handwriting, have been promulgated.

Accordingly, it is no wonder that recently doubt on the part of jurists has again appeared and articles have been published in newspapers with respect to whether it is at all possible to convict a falsifier of documents on the basis of handwriting identification alone, even though the law in Clause 93 of the StPO [Strafprozessordnung -- penal-process order], and Clause 441 of the ZPO [Zivilprozessordnung -- civil-process order] without doubt provides that such action is permissible.

The bases for such abstention and the development of such pessimistic views lie much less in the pertinent difficulties of the process, of which we shall speak in detail, than in the following. Without efficacious penal laws, without good jurists, and without criminal-indictment officials competently provided with suitable directions, every battle against crime is in general from the start doomed to failure; even so the forensic identification of handwriting will never be able to fulfill its tasks in regard to the elucidation of falsifications and the exposure of the falsification of documents, if it does not proceed steadfastly in accordance with the principles of its essence and in accordance with one of these pertinent methods, and above all if it is not managed by graphologically and practically qualified and experienced handwriting experts.

However, all this is lacking in our forensic practice; likewise, judging from the complaints of foreign jurists in our technical journals, circumstances are similar in other countries. The investigations and representations presented here by us are above all intended for the rectification of these adverse conditions. At the same time they are intended to make it possible for all those officially

or professionally concerned with handwriting identification to form an opinion themselves of what is a question in the forensic identification of handwriting and what they themselves may contribute to the administration of justice.

This book has been written for the instruction of those concerned with handwriting. For the latter, it does not suffice, however, that they are provided with the necessary technical knowledge for the practice and a successful method; on the contrary, they must also be provided with the most indispensable scientific principles. Moreover, as previously mentioned, our representations have as a purpose the orientation, with respect to the questions of the identification of handwriting, of all those who are interested or professionally active in forensic practice.

If we are to begin with the scientific principles, then from this point of view the identification of handwriting may perhaps be characterized as the stepchild of graphology. Since the pioneering investigations of Georg Meyer around the turn of the century, and the formulation of three basic laws and the presentation of the most valuable (but little heeded by the practice) "psychological expedients" and suggestions by Ludwig Klages, little of an essential nature has been done for the seeking out or the elucidation of the specific problems of the identification of handwriting. Neither has an attempt been made at a systematic summarization of all relevant questions, or a demarcation from those of analytical graphology. That which the literature has since brought forward in our field, leaving out of consideration quite isolated exceptions, must be considered scientifically valueless. Therefore, it appears urgently necessary that once and for all the special problems of comparative graphology, its principles,

and its specific questions be presented in coherence and be systematically summarized. (Already in 1926 Ludwig Klages (4tschr. f. Menschenkunde, [Anthropological Journal], Vol 2, page 42) had expressed the wish that the graphological literature might experience by means of a work on forensic graphology that supplementation which it so urgently required at the time. With this book, I hope to comply with his wish.)

Conditions with respect to the science are bad, but conditions with respect to the method of the forensic identification of handwriting are even worse. Most experts draw upon those characteristics which appear important to them; many compare solely letters according to their outer similarity. Also, consideration only of the characteristics of handwriting movements is relatively rare. Some expertise trend toward such a low level that they scarcely deserve the designation expert opinion. Moreover, the opinions of professional graphologists in most cases in no way meet the requirements of a methodical identification of handwriting, since here the majority of attempts are aimed at managing with the viewpoints and standards of analytical graphology. However, this is impossible for the very reason that here the previously most prevalent characteristic concept with respect to the identification of handwriting required a quite considerable alteration -- part expansion, part limitation -- as we shall see later. Forensic identification of handwriting thus requires its own methods which of course take into consideration the results and methods of analytical graphology, and in many aspects depend upon such graphology, but which rest upon special principles and are patterned in accordance with the particular requirements of the identification of handwriting.

However, even the best method is of no avail, if no handwriting experts can be placed at the disposal of the administration of justice -- experts which are capable of managing such a method so that it will assure the greatest possible success.

("If they had the philosopher's stone, the philosopher would lack the stone," Goethe, Faust, Part 2.) Every science, every art, must be learned; it is no different in the case of the art and science of the forensic identification of handwriting. Thus, one of the principal purposes of this book is to provide our handwriting experts with the necessary relevant knowledge which today many of them still in no way possess.

Accordingly, the course of the following presentation was adjusted to this instructive purpose. Firstly, the development of an individual manuscript and its influence through falsification will be represented, as well as in turn the realization of this manuscript from the motives and capabilities of the falsifier. Hereby, the problem of comparative graphology will be explored at the same time. Then, after the representation of the rudiments and the method, the development of an individual document and the process with respect to a concrete falsification will be pursued, thereby presenting the course of an identification of handwriting and the application of our method. Finally, after the discussion of individual specific cases of falsification and comparisons, the limits of forensic handwriting identification will be represented. Added are an appendix which gives directions on the formulation of expert opinion, another which contains discussion of the illustrations, and a third which contains an expert judgment on the basis of a completed analysis. However, not only technical knowledge should be made available to the experts. The presentation of the

limits of handwriting identification should wake the conscience of the expert and sharpen it as well. Moreover, it should evoke in general a certain ethos of handwriting experts -- an ethos which until now has apparently not penetrated everywhere. The expert must become increasingly aware of the difficulties and the responsibilities entailed in his profession; above all he should always bear in mind the importance of his opinion in most cases, and that often the very existence and freedom of a human being depend on such opinion. For even though the judge, in accordance with the law (Clause 441 of the ZPO, which also applies in penal law in accordance with the meaning of Article 93 of the StPO), rules on the result of the identification of handwriting in accordance with free conviction, nevertheless, this very judge as a rule has not been graphologically trained and thus is not an expert judge, even though he may be aware of the responsibility, relying on the opinion of the expert with whom he is familiar and who has been called upon to compensate for the judge's lack of technical knowledge. Being aware of this, the expert will be kept from superficial, hasty, and much too self-assured assertions. On the other hand, he will be spurred on to place in the service of the administration of justice all his capabilities and all the possibilities of his art, which he must have fully mastered.

Last but not least, this book is aimed at making clear, for the benefit of those who are concerned with the identification of handwriting in forensic practice and in the administration of the office of the public prosecutor, of what such processes actually entail, of possibilities and limitations, of the tasks which can be entrusted to these processes in the practice, of those tasks with respect to which such processes are not applicable -- in other words,

of what the administration of justice can accomplish with such processes. It will be shown that the identification of handwriting can be employed to a much greater extent than was previously thought possible on the basis of previous practice. Again and again, the evaluation of the practical value of the identification of handwriting has fluctuated between overevaluation and under-evaluation in the course of decades. Doubtless today we find ourselves once again in the phase of underevaluation. In anticipation, with respect to the results of our investigation on this point, we can say that in the right hands and with the proper method the identification of handwriting can be of inestimable value to the administration of justice. However, as any art, it has its limitations, and it should not be entrusted with tasks for which it is not suitable nor conditioned. With respect to the possibilities of which it is capable and the limitations to which it is subject, not only the handwriting expert, but also above all the judge and the public prosecutor, the lawyer and the notary, as well as the criminal-law officials -- in short, all those who may be concerned -- must have a clear perspective so that they may know what use they can make of this process and what they can attain with it. They will of course restrict themselves to the practical and the psychological and criminological expositions; moreover, clarifications with respect to the concept of the characteristics of manuscript and the evaluation of these characteristics, presentations of the origin of a manuscript, and principles established by us will also be of great importance for them. This is perhaps less relevant in the case of the discussion of methods. Of course everything will be quite understandable only to those who have followed patiently the entire course of our investigation. For only then will one be in a position to

form a correct impression of the essence of the identification of handwriting, of its art, of the material with which it makes formulations, of what it is capable. Only then will one be capable of the so important judgment whether the handwriting expert summoned for consultation is equal to the requirements which one may and must place upon him.

In order to attain the goals which our work entails, it moreover above all appears necessary to compare issues with the results of modern graphology, not without critical faculty, but subjecting to examination such graphology with respect to its applicability specifically in the field of forensic handwriting identification. In this connection, the attempt must be made to cope with the problems which we encounter in regard to what we term comparative graphology, to take steps to solve these problems, and to derive therefrom the essential principles for forensic handwriting identification. Proceeding herefrom, all questions which arise in regard to methods and their practical execution should be represented as fully as possible in their natural and logical sequence; in other words, these questions should be brought into a system. However, an attempt at such systematics has never before been made.

An objection is of course to be expected, viz., that our expositions are in part too scientific for the comprehension of the average handwriting expert, that the execution of the method is too difficult.

In reply to the objection voiced against the method, it can be said that the handwriting expert has to make adjustments in accordance with the relevant method; it is not that the method itself must adjust to the insufficiency of the handwriting expert. He who

in general understands nothing of the essence of handwriting cannot be a forensic handwriting expert. Inversely, even the best psychologist or graphologist is not equal to the identification of handwriting, if he does not recognize the special problems entailed and is not master of the standards set by them. In regard to the type of presentation, I have endeavored with all my power to write understandably. Neither have I avoided repetition and reference, nor have I attempted to save space when it appeared necessary to render more detailed discussion or greater emphasis.

In connection with the extent of the task which we have set for ourselves, it was manifest from the nature of the theme that the solely decisive value would have to be placed on graphological and psychological aspects. Chemical and technical expedients, as valuable as they often are, could only be treated marginally, particularly since in the presence of the constant progress of science and technology these processes are constantly subject to alteration, thus demanding for their application as a rule the consultation of special experts, as is shown in the cases of the Federal Criminal Court or the Zurich Cantonal Police Administration. On the other hand, we have placed the greatest value on always noting those cases in which the application of such methods is reasonably assured of success -- methods which come under consideration in these individual cases. Just as in relation to the aforementioned processes, a presentation of the identification of typographical scripts would have required a separate treatment with a quite different foundation. For here a machine is encountered which stands between the writing human being and his handwriting. This indicates, however, that here with psychological and graphological methods alone we would not reach our goal in regard to the

identification of handwriting. Indeed, with respect to the identification of typographical scripts, observational and procedural methods would be necessary which lie principally in the technical field.

Finally, for the sake of better understanding of the following, we shall define briefly the individual expressions used repeatedly by us. Hereby, it is not a question of the terminology of graphological concepts. These I have attempted to explain each in its proper place, and, wherever possible, I have attempted to provide elucidation by referral to the illustrations. This has been done because individual concepts used by us in our investigation, perhaps already known from general or juristic speech, are used divergently, partly because of better understandability, partly because we would have to express ourselves in much too complicated a manner with respect to the retention of the usual speech. Individual such concepts have also been coined by us.

1. By the concepts "to falsify" and "falsification," partially diverging from juristic terminology, should be understood dissimulation of one's own handwriting for the purpose of intentional deceit, be it under a fictitious name, the name of another person, or a pseudonym; or unauthorized imitation of a foreign script; or, finally, the alteration of one's normal handwriting for the purpose of deceit; i. e., "falsification" in the meaning of the penal code. By "falsifier" should be understood a person who exercises any of the above-mentioned acts, regardless of whether he incriminates himself with respect to the falsification of documents, or, as the writer of pseudonyms, with respect to any other delict, e. g., libel, calumny, threatening, extortion, false accusation, etc. Self-evidently, it is also irrelevant whether the person remains unpunished for any reason in individual cases.

2. By "factual script" should be understood, in concord with the practice, that script in which there is doubt that it represents "falsification" in the afore-mentioned meaning.

By "scripts subject to identification" should be understood those scripts originating from persons considered suspect, or those scripts originating from the supposed factual-script writer which are assumed genuine but are subject to examination to decide whether a falsification is at all in evidence, e. g., testators, when the falsification of a will comes into question.

By "suspect" should be understood the person assumed to have written the factual script, regardless of whether or not he is involved in the process. The expression "the accused," or the like, would imply such a limitation.

3. "The identification of script," or "the identification of handwriting," indicates of course the comparison of the factual script with the suspected script, carried out with the means and the method of comparative graphology for the purpose of establishing whether or not both scripts have been written by the same person. This also entails the examination for genuineness of the factual script, i. e., whether falsification is at all in evidence, insofar as the foregoing is in accordance with the law (Article 93, StPO). Hereby, however, in accordance with our views, it is also a matter of the interpretive preliminary examination of factual scripts for the purpose of spotting the perpetrator, or of scripts subject to identification for the purpose of deciding whether the suspect would be at all capable of a falsification of the afore-mentioned type. By "forensic" identification of handwriting should be understood of course that which is taken in hand in police or public-prosecutor processes, or upon commission of an advocate or lawyer.

4. The concepts "comparative graphology," "identification characteristic," and "identification form" have been coined by us, and can only be understood fully in the course of the reading of our expositions.

A. PROBLEMS OF COMPARATIVE GRAPHOLOGY

I. The Position of the Identification of Handwriting in the General Science of Handwriting, and in Relation to Interpretive Graphology

The German literal equivalent for graphology is "Schriftkunde" [science of handwriting]. Thus it teaches the science of handwriting so that one may understand its essence. Practiced systematically, it is a science. However, it lies ineradicably in the essence of the human being, especially the modern human being, that once having acquired knowledge he will at once attempt to make use of it for the mastery of the environment which surrounds him, thus making an applied science of each science. It is a like matter in the case of the science of handwriting. It is much less practiced as a pure science, for the sake of the latter alone, than it is for the realization of certain practical purposes. The goals which are striven for by means of its application are now quite diverse. It has developed into a science with the aid of psychology and its branch, the science of expression, and of course above all in pursuit of the purpose of assessing the character of a person from his handwriting. Even today, this is its principal field of application. Thus, by graphology in ordinary speech one understands the assessment of character from handwriting. It would be better if, for the sake of differentiation with respect to other fields of application of the science of handwriting, it were to be designated interpretive or characterological

graphology, for graphology in a broader sense is still being employed for many other purposes. Thus, for example, the science of handwriting has long been utilized for the deciphering of old manuscripts, for the judgment of the age of written documents, for the interpretation of the character of certain historical personalities in fulfillment of the goals of historical research. Recently great endeavor has been made to render graphology serviceable to medical science; this is manifest in that attempts have been made to diagnose diseases from handwriting. Until now, these endeavors have met with little success. Nevertheless, in many cases it is possible to discover physical or mental disturbances in handwriting which at least makes it possible for the graphologist to advise the writer to see a physician. To the extent that such judgments are of importance in the forensic practice of the identification of handwriting, we shall speak of them later. Graphology is also employed in constitutional research, as above all by Kretschmer and Eucke, and here apparently with greater success than in medicine. (Cf. also the article by Fenk "Bodily Structure and Character," Ztschr. f. Menschenkunde, Vol 12, page 187 f.)

Besides the assessment of character, the principal field of application of graphology is the field of the administration of justice, as an auxiliary means in which field it can no longer be ignored. Here also, graphology serves diverse purposes; thus, for example, it was employed for a period in the examination of the credibility of witnesses or of defendants (by Hellwig in Berlin), along with psychological judgments. Whether this is still the case is beyond our knowledge. (Cf. in this connection Meinert, Vol 14, page 75; Vol 15, page 12 f., loc. cit. In the report of Undeutsch at the congress of the German Society for Psychology in 1953 on the

development of forensic-psychological expertise, only the researches of Roda Wieser (to be mentioned later) were brought forward (see page 150 of the report of the congress). In a broader sense, the science of handwriting or graphology plays its leading role in the forensic practice with respect to the so-called forensic identification of handwriting in the broadest meaning previously formulated by us; thus, the present work is concerned with this aspect.

Thus, the identification of handwriting, exactly as in the case of analytical graphology, is only an instance of application or a branch of general graphology or the science of handwriting. Accordingly, our task will have to be that of investigating the interrelationship of these two main phenomena of the science of handwriting, and above all of determining in what respect they diverge from one another and that which they have in common. This investigation and the unfolding of further presentations will show that each form of phenomenon can be regarded as independent in itself and having a distinct sum of characteristics; but that they do not enjoy a status of equality, inasmuch as comparative graphology is often referred to analytical graphology. At times, in its practice and with respect to its efficacious preparation, as for example in the acquisition or the choice of material for identification, or above all in the detection of a suspect, the identification of handwriting requires not infrequently the cooperation of analytical graphology. This fact will be taken up by us in regard to the preliminary examination of scripts. Further and most important, the identification of handwriting must borrow from the experience and knowledge of the latter, as well as a part of the principles applied in the case of the latter, making use of this in its practice. On the other hand, comparative graphology is subject to the danger of

groping in the dark or of resorting to an outwardly mechanical comparison from the dead -- as it were -- forms in its isolation. Attributable for this condition is the fact that throughout its quite long history analytical graphology has not remained content with the determination of character from handwriting; on the contrary, the fact is that it at once probed in general into the essence of script and has to a certain extent revealed and made lucid the latter. It has signified a great step forward in the development of graphology and for the understanding of the essence of script that above all Heiss (see Note 1 below), Pophal (see Note 2), and Carl Gross (see Note 3) have shown that the act of writing, and thus writing itself, is to be psychologically and physiologically regarded as a movement, and its laws are to be understood on the basis of this dynamic method of observation.

([Note 1] "The Interpretation of Handwriting," 1943.)

([Note 2] "Handwriting As an Indication of Cerebral Conditions," and other of his numerous writings, some of which will later be drawn upon in detail.)

([Note 3] Vitalitaet und Handschrift [Vitality and Handwriting], 1942.)

This conception of handwriting as the result of movement which in addition to filling writing space leads to the revelation of the forms of script, thus producing and representing an organic whole, can now be considered the most prevalent, for it forms the basis for the method presented here, in spite of all differences in the manner of detailed presentation and in the evaluation of discoveries. This dependence does not originate solely from scientific

considerations and principles, but rather because this method of the observation of script has proved the sole reliable and potentially-successful method in the practice of the forensic identification of handwriting. However, the necessity for such consideration of the results of characterological graphology in relation to the identification of handwriting originates from another consideration. If, as is evident from the practical purposes of the forensic identification of handwriting, not only are scripts to be compared for the determination of similarity or dissimilarity, but the perpetrator of the falsification of handwriting is also to be detected, then we are dealing with an undertaking which is doomed from the start to miscarry, if the revelation of the personality of the writer of factual script and script subject to identification is not effected. However, only with the help of an observational method based on psychology and the science of expression is it possible to disclose the personality of such writers from their handwriting.

Of course on the other hand it is to be asserted with all emphasis that it is not necessary that comparative graphology hold itself slavishly to analytical graphology. Comparative graphology has problems that are quite its own; its methods must diverge from those of analytical graphology in individual cases of application, and, most important, comparative graphology has different standards. All this will become clearer to us in the course of the observation at hand, above all in the consideration of the problems and the difference between interpretive characteristics and identification characteristics. Thus, it would be quite improper to attempt to cope with the problems of the forensic identification of handwriting with analytical graphology alone, with its results and rules, for the prerequisites, as well as the goals, possibilities, and standards, which apply in the case of the forensic identification of handwriting,

are different from those of analytical graphology. With respect to a sole knowledge of the art of interpretation and its methods, the identification of handwriting cannot be carried out successfully by this means alone; such an attempt would almost surely end in miscarriage in the practice.

Therefore, our work is dedicated above all to these very special problems of the identification of handwriting which differ from those of the art of interpretation, and to the best possible mastery of them in the practice. For this very reason, in the following we shall go into detail again and again regarding the theoretical and practical differences between the art of interpretation and the art of identification, wherein they interrelate and complement each other.

II. The Psychology of the Falsifier of Handwriting

Just as we attempt to assess the character of the writer in question by means of the art of interpretation, by means of the identification of handwriting we attempt to determine the personality of the falsifier. As in the case of the former with respect to the assessment of the character of a certain person from his handwriting, the prerequisite is represented by general psychology and in particular characterology and the science of expression; moreover, those who are concerned with the judgment of handwriting which has developed from criminal motivation for deceitful purposes must understand at least something of criminal psychology, at least as much as is unconditionally necessary for the judgment of this very type of criminal act, that of the falsification of documents (see Note below). Thus, he who is concerned with the judgment of handwriting must at least

have a clear perception with respect to what the conditions were from the viewpoint of the falsifier of documents at the moment the decision was made and carried out, i. e., that of disguising his own handwriting, or imitating or altering a foreign script. Hereby, even the scantiest information on the following is at least necessary: the motives which were the basis in general for such acts; the reasons why the perpetrator in such cases was moved to such an act; the goals he may have been in pursuit of; the possibilities afforded such a falsifier in accordance with his natural capabilities in the execution of his plan; the thoughts and reflections which may have induced or accompanied his perpetration; finally, the details of the various ways by which he may proceed.

([Note] The only good work -- limited of course to the writer who uses pseudonyms -- in this field is that of Hans Binder: Das anonyme Briefschreiben [Anonymous Letter Writing], 1948, (special publication from Schweizer Archiv f. Neurologie u. Psychiatrie [Swiss Archives for Neurology and Psychiatry], Vols 61 and 62). Schneickert's article on the same theme, "handwriting," 1937, page 87 f., has little to offer.)

Speaking generally, the falsifier of script can at best be compared to an actor, for the falsifier also manifests outwardly to a certain extent a foreign personality, disguising himself and wearing a mask. It is only that the perpetration of the falsifier occurs in the clandestineness and in the darkness of concealment and cunningness in the limited field of handwriting in the presence of evil thoughts and under the pressure of the fear of being discovered. On the other hand the actor portrays in the bright lights of the footlights under the public eye on a stage which represents the world, with good intentions and inspired by the applause of the public.

Professionally, it is of course a question of such acting only in the case of professional or habitual falsifiers or compulsively-driven habitual writers of pseudonyms; otherwise it is a question of only single or inextensively-repeated assumptions of such a role. Thus something theatrical is at once manifest in the handwriting of adroit falsifiers or handwriting-disguising artists. (According to Binder, loc. cit., prolific writers who use pseudonyms produce many clothed interpretations in the Kohrschach test.) Just as there are always only a few great actors, only rarely does an accomplished artist with respect to the disguising or imitation of handwriting make his appearance. The number of bunglers in this field is quite great, much greater than the number of poor ham actors. It can be said that the majority of cases of falsification which concern the forensic practice have fared badly. Psychologically, this is quite thoroughly comprehensible. With respect to the person who is at all literate, the actual process of writing occurs so far beneath the waking consciousness that the writer virtually thinks only of the content of that which he wishes to express or communicate, scarcely thinking of the writing movements that he carries out or the script forms that he originates. This holds true not only in the case of writing but also in the case of all movements which are more or less carried out without conscious effort. It is known how difficult it is to play the piano, dance, or perform a similar series of movements smoothly, or even to alter the rhythm of the process involved, when at the same time one must pay close attention to each individual movement. A relevant example is perhaps manifest in the Indian legend told by Meyrinck in which the milliped is lamed by its enemy the spider: the former is obliged to tell the latter the manner in which it advances, i. e., where the milliped plants each of its thousand feet and the succession it employs to carry this out. It is quite a like matter in the case of handwriting which is indeed a rhythmical

action. A person who wishes to credibly disguise his own handwriting or to aptly imitate or inconspicuously alter a foreign script is compelled to suppress in his writing the natural movement impulses which he has inherited, as well as the habitual handwriting characteristics which have developed as he has matured but which he has become unconscious of, and thus to produce something that is foreign to himself, in so doing must always be afraid that the foregoing will creep into his artistic product and from his standpoint spoil that product. This psychic compulsion makes him unsure and easily leads him to overcompensations which are manifest in distortions and exaggerations of forms which in all cases can reveal the existence of falsification, as well as the falsifier himself through the type of execution of handwriting movements with respect to characteristic forms, as for example in such falsification the quite unavoidable reversions to handwriting characteristics which are natural to him and which he ordinarily produces in writing. Just as the actor is subject to the danger of stepping out of his role, so is the falsifier subject to the danger of such faux pas.

The more strained the degree to which the attention of the falsifier is directed toward the production of foreign forms, the less it is possible for him to watch closely all the characteristics of his handwriting movements. Thus those graphic elements which correspond to the natural writing impulses and habits of the falsifier creep in all the easier at points unnoticed by him into the falsifying handwriting. Hereby, it is a matter of no great alteration, if he keeps to a set pattern, be it in the case of a disguising of handwriting on original school copies or in the case of artificial handwriting; be it that he is compelled to keep to such a pattern in the imitation, i. e., with respect to the handwriting to be imitated.

From the standpoint of depth psychology, this process of the unsuccessful suppression of the true nature of the falsifier can perhaps be perceived as a struggle between the conscious and the unconscious -- between the ego and the self -- in which the unconscious remains the victor, as indeed is invariably the case with such conflicts within the person. Or it could also be said that the falsifier shams himself, so to speak, through his strained attention on the success of his task and through his concern about the miscarriage of the prospect of the success. (Here it is not possible to go into the psychology of the falsifier of handwriting from the standpoint of depth psychology, since this would require a special investigation.)

If we are now to observe the falsifier of documents from a criminological standpoint, the currently customary division into profession and habitual criminal on the one hand and incidental criminal on the other plays only an insignificant role, since -- at least in accordance with our experiences -- the first category is relatively seldom represented among falsifiers of handwriting. A criminal who has made a profession of the falsification of checks may perhaps be found now and then in large cities; there are also passport falsifiers who have become professionals, e. g., in the service of espionage. Such criminals cannot be differentiated in any way from other professional criminals; they regard falsification, so to speak, as their normal activity upon which they depend for their livelihood and which they regard as just as justified as other people do their activities. The majority have a pronounced inclination for their profession which they are neither capable nor desirous of abandoning. Their motive is simply that of assuring their own subsistence. (Here, as a type, the "criminal" is a "form of life" according to Spranger (cf. H. W. Gruhle, Verstehen und

Einfuehlen [Comprehension and Empathy], 1953, pages 316-317; cf.

also Max Kaufmann, Psychologie des Verbrechens [Psychology of Crime], 1912; E. Wulffen, Krim.-Psychologie [Criminal Psychology], 1926.)

If this type of document falsifier is rare, the habitual anonymous writer -- at least according to Binder -- can be considered a more usual phenomenon. By the latter is not meant one who executes several or even a series of such communications, but rather the impulsive, habitual writer (so-called by Binder). Here it is a question of people, for the most part psychopaths, who are possessed by an uncontrollable impulse to execute anonymous communications. As expressed by Binder, they are in flight from themselves, sometimes leading a kind of double life. With respect to their conation, they place little value on the efficacious disguising of their handwriting; accordingly, they are easily convicted. They can scarcely at all be designated criminals with respect to vagrancy; they make their appearance quite infrequently -- at least we have encountered not a single case in our practice. It can thus be said that all falsifiers of handwriting are incidental falsifiers. There is a definite diversity degree in the intensity of their criminal intent and in the simplicity or cunningness of their actions. They range from the crafty falsifier of documents who works with letters cut out of newspapers or other publications to the crude peasant who in rage tosses an insulting note at the entrance to a neighbor's farm in the belief that he has disguised his writing by inclining the letters to the left rather than to the right.

Criminal psychology is principally concerned with the various motives for the execution of a crime; accordingly, we shall next undertake a brief summary of the motives of the falsifier of handwriting, particularly because these motives -- as we shall see -- are not without influence for the most part on the formation of

falsification. Of these motives we can distinguish between two larger groups: those perpetrated for the sake of reaping a profit; those perpetrated to defame others. Belonging to the first group (M. H. Goering, "Criminal Psychology," Handb. d. vgl. Krim. Psych. [Handbook of Comparative Criminal Psychology], Vol 3) are perpetrations in regard to the deceitful imitation or alteration of factual handwriting, i. e., falsifications of documents in the meaning of penal law, as well as letters of extortion executed by anonymous writers. The remaining anonymous communications -- in fact the majority of them -- belong to the second group. Perpetrated for the purpose of reaping a profit are, for example, the falsifications of legal notes and checks, as well as the falsification of contracts, dockets, receipts, testaments. With respect to perpetrations with intent to defame, the most diverse actual motives, i. e., underlying motivations, may lie behind this intent. In accordance with our experience, most often encountered are enmity, revenge, and jealousy. Binder mentions as the principal motive of the anonymous writer unappeased striving for self-assertion or power, and as a matter of fact the afore-mentioned emotions can often be related to such striving. Not infrequently there are motives which relate to the eroticosexual sphere, e. g., jealousy or frank delight in obscenity. However, there are cases of justifiable protestations anonymously raised by disguised handwriting, for example, by those who lack the courage to bring forward their assertions openly. In such cases, under certain circumstances, no legal prosecution is called for. Pure delight in harming others can also be the motive for falsifications -- above all on the part of anonymous writers. Of course not always is a single motive in evidence; several motives can be incorporated or overlap at one time. This is called a motive complex in psychology. Fortunately to be classified as rare are those cases in which the perpetrator disguises his own handwriting in such a way that it appears

similar to that of another, in order to create the impression that it originated from the second person. To produce such handwriting credibly, without the actual writer or at least his intent being perceptible, is very difficult and thus possible only in the case of particularly clever writers, hence the rarity of this type of falsification. With regard to motive it might be asserted that in general it is often quite slight in relation to the ultimate effect of the falsification itself. In this connection, an entire city is sometimes disturbed by hateful or base anonymous writers, since thereby the perpetrator, giving vent to his own anger which may be inconsequential in itself, will express himself in writing from the depths of his soul. (Ferriani, in *Schreibender Verbrecher* [The Handwriting Criminal], 1900, has made relevant points in regard to this matter. However, his book is otherwise of value only as a collection of examples and is far surpassed by the work of Binder.)

Although they actually concern criminal psychology, we have entered into a discussion of these motives, because on the one hand they can call the attention of the appropriate officials to such perpetrators, and can thus make possible the abstraction of suitable material on handwriting for comparison. On the other hand, and most important, they not infrequently permit conclusions on the emotional condition of the perpetrator with respect to the falsification of handwriting and in turn on the type and manner of such falsification.

This applies particularly in consideration of whether the falsification was perpetrated carefully, in accordance with a plan and cold reasoning, or under compulsion or the urge of passion. The end result of the falsification will accordingly be quite different in each case. For example, a falsified will will appear quite different if the perpetrator has confidently executed this in accordance with careful study of the handwriting of the testator for the purpose

of a pure gain of profit, than it will if he has spontaneously written the falsification in excitement over a real or fancied grievance through disappointment over the provisions or apportionment of an inheritance. In the first case the falsification is usually better, and criminal conviction more difficult. Thus, we distinguish between planned and premeditated falsifications and emotionally-influenced falsifications. Of course in the second type it is not a question of pure affect, for in the case of actual effect -- as Binder justifiably asserts -- a falsification of handwriting is impossible. Such a case is invariably overwhelmed by a certain suddenness of the outburst which more or less dims the waking consciousness. However, in this case no one is capable of executing an efficacious falsification of handwriting. If, however, the actual rage or other affect has faded away, the excitement can still be in evidence for a long time and can influence the aggressive striving, as well as still dim to an extent the clear reflection. We understand this emotional condition as affect-conditioned or affect-influenced. This difference between cold premeditation and affect-conditioned excitement will now condition the type of execution of the falsification of handwriting, at the same time causing the factual script to have a different appearance. Generally, the deliberate writer writes slowly, often overcautiously. He will tend toward exact copying or tracing; he will use an unobtrusive writing tool, perhaps a pencil or pen to which he is not accustomed; as an author he will choose a monotonous, uniform style or use a copy as a model. Prepossession with all the foregoing will strongly stiffen the writing and render the artificiality of the creation easy to ascertain. In searching for the perpetrator, this type of falsification makes it possible to assume an unemotional, little-affected, perhaps somewhat restrained, but strong-willed and obstinate character. In identification of the handwriting, it should be taken into

consideration that such falsifiers often execute additional corrections or mendings, due to exaggerated caution; that in copying, they often exaggerate the characteristics of the factual handwriting; that in disguising their handwriting, characteristics of their own hand occur or are distorted. Should a certain disguised style be chosen and used throughout, then the identifier must look for those places which contrast with this style. This is usually not difficult in the case of longer writings, for even with great concentration capacity it is for the most part quite difficult to maintain throughout a flawlessly disguised handwriting style or even a close dependence on the handwriting model.

More dangerous than the falsifier who proceeds upon premeditation is the intuitive falsifier who can familiarize himself to such a degree in a foreign handwriting or in a model to be disguised that he follows virtually unconsciously the characteristics and forms of the foregoing in executing the falsification. He can be compared to the accomplished actor who interprets his role as if he himself were the living person represented and does not merely "act." It is most difficult of all to convict such a falsifier, because the latter is generally successful to a certain degree in conveying the total impression of the imitated handwriting and in producing a natural-appearing writing style as a disguiser, and because such a falsifier seldom steps out of the role. The so-called handwriting artists, of whom we shall speak later, also belong to this category. Fortunately, they represent a definite rarity.

The affect-influenced falsifier is easier to convict than the premeditative or the intuitively-writing falsifier. If, as has been said, we have no pronounced affect-conditioned handwriting to deal with, the excitement of the falsifier will nonetheless be evident in nonuniformity, individual sweeping, uncontrolled features,

or in flaring ascending letters, fluctuating lines, wavering pressure, and the like. (For an example of an affect-influenced handwriting specimen, see the specimen to the right in Figure III.) In this case one must seek out the perpetrator in the circle of impulsive, strongly affect-responsive, quite susceptible, excitable, perhaps choleric persons, or of those who tend toward harboring inclinations resulting in explosive outbursts. In the heat of excitement or in a certain recklessness the writer is seldom able to attain in copying the necessary accuracy of aim, since the latter is invariably impaired through hurried writing. In the disguising of his own handwriting he will proceed so unsystematically that his own true handwriting characteristics will again and again be apparent. He will apply now this, now that alteration in disguising his hand, but for the most part only those which are superficial. Accordingly, he will disguise size and position, write with nonuniform speed, and so forth. In copying, he will reproduce the foreign forms only poorly or inaccurately. In many cases such falsifiers, noticing their faux pas, will attempt improvements, the diagnostic importance of which will be discussed later. Likewise, such writers will not carefully heed the adjustment of writing space; for example, they will often go over the right margin, or they will allow the left margin to become gradually broader. In short, they will allow a number of characteristics of their own handwriting to creep into the factual script which makes possible their ultimate conviction. It might also be mentioned that in the case of affect-influenced writers the phenomenon is not seldom that affect-laden -- so to speak -- words are particularly emphasized in the writing, e. g., those which relate to the grievance suffered, perhaps the name of the enemy, or even the word "I." Emphasis can be carried out by means of the increased size of letters, the use of Latin-style handwriting, enhanced pressure, the arrangement of intervening spaces, etc. Should similar phenomena be found in the

handwriting of the suspected person, this then is of course a more important indication for purposes of identification.

In concluding this theme it should be mentioned that it is often of course difficult, at times even impossible to determine from handwriting whether an affect-expressed excitement is only circumstantially-conditioned, or is engrained in the character of the person involved (see Note below). Finally, an otherwise calm and collected person can become angry due to a grievance or envy. Thus, one should bear in mind that affect-influenced writings do not necessarily originate from affect-influenced writers. In general, however, one will be able to reckon that excitable and strongly susceptible persons are more easily influenced by effect than are others in the execution of a falsification.

[[Note] The question of circumstantial conditionality will always be a rocky crag of graphology. It cannot be avoided in the identification of handwriting even in the presence of augmented handwriting material, since the compass of factual scripts cannot be increased. In this connection, the especial value placed on basic and primary characteristics, which will be discussed in detail below, is of particular importance.)

However, still more important for the identification of handwriting than all these questions is the ascertainment of the psychic capabilities which the handwriting falsifier may employ for the execution of the task which he has set for himself. It is quite clear that falsifications will turn out quite differently, each in accordance with the degree of the aptitudes and capabilities of the perpetrator. One of the best proofs for the innocence of a suspected person is the irreproachable ascertainment that, judging from the capabilities apparent from his handwriting, he could not have been able to perpetrate the factual script in question. (Cf., in this connection, Klages, Ztschr. f. Menschenkunde, Vol 2, No 3, page 38.)

Indeed, the most important capability for successful falsification is the ability to concentrate, for a falsifier who is unable to concentrate fully in copying or disguising is at once betrayed through constant reversion to his own handwriting style. We have already indicated above how dangerous of course it is for him to concentrate too strongly. In the previous investigations of the identification of handwriting, much was discussed with respect to the direction of the attention of the falsifier. In this connection, Klages has drawn up a law of which we shall speak later. However, it is not merely a question of the direction of attention but of a total of three things, viz., besides the first, that which the falsifier regards as calling for alteration, and his capability with respect to attention in general. As has been mentioned, slight concentration has the effect that the falsifier fails to alter sufficiently his hand or to copy exactly the forms to be imitated; thus he is led to heed individual places too strongly, others too insufficiently. We shall later discuss the conspicuous characteristics. That which concerns the direction of attention will be diverse in accordance with the type of falsifier. Some falsifiers, above all the hesitant or the inflexible, will require a certain period of time before they are able to attain a credible style in the disguising of their own handwriting, or a certain accuracy of aim in copying or falsifying. This must be attained before they are able to get off the ground, so to speak. (Wittlich has justifiably referred to such cases; see Angewandte Graphologie [Applied Graphology], page 188.) Others -- indeed, the majority -- concentrate from the beginning on their activity, but sooner or later their attention becomes fatigued, be it toward the end of the writing, of the paragraph, or even the sentence or word. Whether the faux pas are to be sought at the beginning or at the end depends on these differences; in accordance with our experiences they are to be found much more often toward the end,

above all in the case of longer writings. (This is also confirmed by the well-known graphological ascertainment that the beginnings of words usually express more of the conscious mental life (cf., for example, Steinitzer, H., Aus der Lebensarbeit eines Graphologen [From the Professional Experience of a Graphologist], page 32 f.)) Since, however, it is not seldom that factual scripts are encountered in which the beginning is the most informative, the handwriting expert must invariably weigh the possibilities of both cases.

Self-evidently, besides the concentration capacity of the falsifier, his skillfulness is decisive for the success of his task. By this is not meant pure manual skillfulness, which a little-gifted person can acquire through industrious practice and which produces at best only a mechanical disguising or copying; rather here it is principally a question of intellectual nimbleness and maneuverability, from which facility in creating works of handwriting springs directly and naturally -- thus, the power of formation and creation -- even though not understood in the actual productive sense. Here there are innumerable degrees, from masterly handwriting artists to the primitive falsifier who crudely distorts his own hand or the handwriting to be imitated. These degrees not infrequently give indications as to the essential type of the perpetrator. Thus, if the factual script is spirited, deft, and finely executed, and if the disguised handwriting denotes imagination, then we are dealing with a writer who is naturally adroit and gifted for falsification. Accordingly, such a writer should be sought among intellectually versatile and mobile persons, the handwriting of whom will often manifest richness of form, quite often flatulence, controlled writing movements, gliding strokes, and fine degree of pressure. On the other hand, a factual script which has been written slowly with awkward, often exaggeratedly impressed strokes which not infrequently appear

choppy and manifest inorganic forms will at once reveal an inept falsifier -- perhaps an intellectually dull, phlegmatic, obstinate person tending toward deep-seated but slowly-ensuing associations, or a retarded, insecure writer who struggles with contactual difficulties.

The capability of perpetrating a falsification must invariably be examined separately before the actual identification of the handwriting; therefore we shall have to return to this subject later. Likewise, only later will it be possible to discuss another important point upon which the success of the falsification depends, viz., the objective difficulties of falsification. In concluding this theme, a fact which will be reassuring to the handwriting identifier should be set forth, i. e., that the average falsifier of handwriting is quite unsure on what it depends for the creation of a credible disguise or a successful copying. Accordingly, in the daily practice these falsifications appear much simpler than is to be expected in accordance with our expositions which must consider all factors serviceable for the purposes of instruction. The repertoire of the vagrant falsifier of handwriting is quite limited. Almost everyone who wishes to disguise his handwriting will alter the slant. The writer who ordinarily writes with a rightward slant will slant his letters to the left or vertically when disguising his hand. An intentional increasing of the size of handwritten letters is also frequently encountered. Many change their script system; for example, those who ordinarily employ the Latin chirographical system will change to the German, or vice versa; or they may write with printed letters or employ an ornamental style; these represent the more cunning expedients. Usually to be encountered are also changes of diverse types of the forms of letters; almost every disguiser will alter his capital letters. By means of such alterations

of letters the falsifier believes he has made his true handwriting unrecognizable. The employment of flourishes or exaggerated loops is also popular. Many are also concerned with finishing strokes, being concerned with commencing strokes only when they are unusual, e. g., beginning far below the line of script. Often encountered are continuous breaks between letters and, not infrequently, angular connectedness of strokes. Herewith, the disgorger is seemingly at a loss for further expedencies. Characteristic but not fully explainable by us is the phenomenon that quite inextensively disguised anonymous writings are oftener encountered than would be expected, and not only in the case of impulsive, prolific writers, which might be presumed (Binder, loc. cit., page 44), but also in the case of thoroughly educated writers. With respect to many writers this may be due to recklessness or a false sense of security, or it may be due to being overwhelmed by affect or the contents of that which is being written. The principal reason therefor is perhaps to be sought in the generally extensive and complete ignorance of the science of handwriting. Likewise, falsifications executed in imitation of foreign scripts are generally not very clever, being limited to a quite superficial copying of the foreign script forms with no manifestation of a feeling for details above all in handwritten strokes, much less a feeling for proportion or rhythm. Of course this only applies in the majority of cases, and even simpler falsifications can be unexceptionably detected, and their perpetrators exposed, only by quite efficient handwriting experts, not to mention the not infrequent more difficult cases. Every reader of this book will become convinced that, in spite of this, the forensic identification of handwriting is no simple matter.

III. The Origin of the handwriting of the Individual and the Alteration of That Handwriting by Falsification

1. The Significance of School Copy

We now turn from the falsifier of handwriting and his possible motives and capabilities to the consideration of handwriting: how it originates in the case of every writing human being and how it is affected by falsification.

The handwriting of every person begins at the school desk. The ABC-learner attempts to imitate in his own hand the letters or words which the teacher writes on the blackboard as examples. This occurs at the expense of great endeavor and great exertion, and in accordance with the respective degree of writing ability, with diverse degrees of success. The teacher as well as the pupil proceeds thereby in accordance with the official handwriting copy contemporarily in force, i. e., the school copy recognized and introduced into the school by the scholastic administration. The immense importance of the school copy with respect to the origin of the handwriting of an individual, entire groups of individuals, indeed, entire districts, countries, and epochs is for the most part underevaluated in graphology. This underevaluation is particularly dangerous in the case of the identification of handwriting.

We begin with the importance of school copy for the origin and development of the handwriting of an individual writer. With this handwriting development, a part of the struggle which the personality wages to free itself from the chains of tradition and convention occurs within the narrow confines of a piece of writing paper. This struggle must invariably end in a compromise, since a complete victory of individual impulses and strivings would nullify the readability of the handwriting, and with that its meaning as a communication, while the total victory of the school copy would never permit the origin of a

true manuscript. The end result of this compromise is the individual handwriting style. Already at the initial stage of learning to write, the child manifests his first individual impulses in his handwriting, for no one executes letters or formations of words exactly as does another, and no one follows exactly the school copy. (Cf. Minna Becker, Die Kinderschrift [The Child's Handwriting], page 33 ff.; Crepieux-Jamin, Grundlagen der Graphologie [Principles of Graphology], German edition published by Saudek, page 8 f.) The reason for this can perhaps be traced not only to insufficient capability, but above all to the fact that each child has its individual writing impulses, creative powers, and imageries which are different from those of other children, and to the fact that the compulsion of the school is incapable of suppressing completely these mental processes. A handwriting style in precise correspondence to the school copy accomplishes nothing for a child or for an adult. Such handwriting would no longer be handwriting in the real sense of the word, but rather a mechanical copy which would be neither interpretable nor comparable. The more strongly a writer holds to the school copy, the more unexpressive his handwriting, i. e., the less expressive it is of individuality, and the less it lends itself to interpretation or comparison. (For this reason the hand of those unaccustomed to writing -- peasantlike handwriting, we might say -- is often difficult to interpret and identify. Moreover, in the course of life such handwriting remains more constant than other scripts.) Therefore, strictly speaking, analytical graphologists are only interested in deviations in handwriting from the school copy, for in such the peculiar features of character are manifest. Important above all to such graphologists is the question concerning the manner in which the writer was able to find a counterbalance between the school copy and his individuality (Heiss, loc. cit., page 194 f.). Likewise, comparative graphology is of course above all interested in peculiarities deviating

from the school copy, and such peculiarities are naturally indicative. However, under certain circumstances, the greatest importance is here laid to the mere fact that a certain school copy was in use; this will subsequently be discussed in more detail.

First, however, something of a somewhat different nature should be discussed. The contemporary handwriting style is not to be confused with the school copy. The former not only depends on the latter, but above all on the essence of the people living in the period in question -- above all on the thoughts and feelings of these people as expressed in their handwriting. If we stop to think how differently, for example, the people of the Wertherian period felt than we, or at least how differently they expressed their feelings, we should not wonder that they wrote differently as well. But even the letters and diaries of our parents and grandparents are quite different from our own -- not only in content but graphically. That the choice of the school copy is also influenced by the *Zeitgeist* might be mentioned marginally.

To return to the subject of the school copy, it is to be asserted with all emphasis that every writing person is more or less dependent throughout his entire life on the school copy from which he has learned to write. Of course, until comparatively recently adherence to the school copy in Germany has to a certain extent slackened in that here two different handwriting systems have been learned simultaneously: the so-called German and the so-called Latin handwriting styles, the former having evolved from Gothic script, the latter from Carolingian minuscule. Thus, in his cultivation of an individual handwriting style, the writer has from the first a choice between two handwriting systems and handwriting copies. Naturally his choice will be directed consciously or

unconsciously in accordance with his psychological make-up and the thus-conditioned writing impulses and tendencies. Since a handwriting copy definitely has a challenging character, as might be expressed in diagnostic psychology, it is to be assumed that the German-style handwriting copy, which calls for leaping, that is, sharply surging script movements, will prove more attractive to the so-called schizothymic type; whereas the Latin-style handwriting copy, which requires more swinging and flowing movements, will be more attractive to the cyclothymic type. (This is apparently borne out by observations in Teillard's Die Deutung der Handschrift auf tiefenpsychologischer Grundlage [The Interpretation of Handwriting on the Basis of Depth Psychology], 1952, page 173 f.)

This slackening of adherence to the school copy which is attributable to the possibility of a choice between two writing systems is also manifest in the fact that very often a change in the use of these systems occurs in the course of one's life or the development of one's handwriting, and in the fact that very many people simultaneously employ both Latin-style and German-style script letters in their handwriting. Many employ letters of both scripts at random; however, most write with a certain system in which they strew individual letters and forms of the other script system. This fact should be precisely noted in the identification of handwriting, for it renders the most important identification points, or at least the first clues to such points. With respect to the ease in which the system learned in school may be exchanged for another, it occurs extremely frequently that for his falsification product the handwriting disguiser will use that script system which he habitually no longer uses; but that he thereby readily reverts to the script system which better suits him and to which he is now accustomed,

since in the case of literate people the system which is not constantly used is more or less forgotten in the course of time or at least is managed by them more difficultly. Just as easily, re-versions to the script system habitually used can occur in the case of those who imitate a script which is written in the system in which the imitator is no longer fluent.

With respect to the evaluation of the importance of the school copy in identification, it is now very important to know that in the artificial creation of handwriting a certain reversion to the school copy occurs quite frequently or we might say even invariably. A falsifier who in advance sees his task as that of disguising his own hand to represent or feign another's -- a falsifier who will not permit himself to use his own handwriting, so to speak -- resembles in this respect a person in the case of whom the ground has given way and who must thus seek out a new "platform" by means of which he can proceed further. In this case what would be more appropriate than to seek an expedient in the school copy from which he learned as a child and with which he has remained familiar, even though in the meantime he may have developed a handwriting style with a quite different appearance? Of course depth psychology has taught us what tremendous and deep-rooted significance childhood impressions have, and we know the extent to which many remembrances from this period tend to adhere. Thus, those who intend to produce a foreign script for purposes of deceit, or to copy another's script, find it easy to remember what they learned in school. This explains why in most cases a handwriting alteration of such type is bound with a regression to the school copy, i. e., why the factual script will depend more on the latter than will the true script. This fact, so important of course in

the identification of handwriting, had already been recognized by one of its first scientific experts -- Georg Meyer. In his excellent article in Graphologisches Monatsheft [Graphological Monthly] (1900) on the disguise of handwriting he asserted that the disguiser of handwriting tends to write in a more "conventional" manner and with less originality. Should the regression be quite extensive, it of course renders identification difficult, because the handwriting then becomes less expressive. However, with respect to the approach to this phenomenon, one should proceed with caution, for a dependence on the school copy must not invariably be considered a regression, for many people cling throughout their lives to the school copy in their natural handwriting.

In some circumstances the relationship of the falsifier to the school copy also makes it possible to draw important conclusions on his person. Should an uneasy dependence on the model be ascertained in the factual script, it can then be assumed that the perpetrator has either had little practice in writing or possesses little originality. It may also be the case that one deals with a young person who has not yet found an individual handwriting style; deliberate copying of the model and suppression of one's own handwriting characteristics may indicate an ingenious falsifier. It is often difficult to determine which of the two types of falsifiers is encountered, and decisive determination is only possible in the case of an experienced graphologist. If the writer of the factual script adheres to a school copy which long since has no longer been in use, this indicates that we deal with a person of advanced age; on the other hand, adherence to a modern school copy indicates a youthful writer. All this is very important not only in the case of disguises of handwriting, but also in the case of falsifications by means of copying; we shall subsequently discuss falsifications of wills in this respect.

A matter which cannot be inculcated too strongly upon the handwriting expert is the following. In the evaluation of the indicative value of the concordances or discrepancies between factual script and script subject to identification, one must constantly bear in mind the overwhelming influence of the school copy. For example, if the falsification has occurred in a limited milieu, perhaps in a village, then from the start one must reckon with the possibility that the writer of the factual script and the suspect could have attended the same school and could have received the same school instruction. Furthermore, they could have learned from the same school copy, perhaps even have acquired writing habits or characteristics of the same teacher. There are also cases of concordances of handwriting characteristics in both scripts which in no way permit the conclusion that the script in question could have been written by the same person. However, the same precaution, if not entirely to the same extent, is quite applicable when it is a question of persons of the same age, even though the milieu of the writer under investigation may not be as limited. In general, the role which the school copy plays in the development of the handwriting of the individual is quite extraordinary and often extends over entire generations. Thus, nonconsideration of the possible origin of a characteristic from a common school copy is one of the most frequent sources of error in the identification of handwriting. Therefore, the handwriting expert should always have before him the school copy in question when he is engaged in identifying a hand-script. (Illustrations of school copies are to be found, for example, in the well-known graphological textbook of Mueller-Enskat.) Although one is unable to go so far as to explain how this has occurred, it has been asserted that a characteristic is the more indicative,

the more removed it is from the writing model. For many handwriting disguisers take it upon themselves to produce willfully all possible deviating features and forms of the writing model. In their elaborateness and their nonconformity with the total impression of the script, such characteristics will for the most part be difficult to recognize as the sham of falsification.

Consideration of the writing model plays a special role with respect to foreign-language handscripts (this is treated above all in Saudek's Experimentelle Graphologie [Experimental Graphology]). Just as I cannot understand the content of a writing composed in a foreign language if I have no grasp of that language, just as little am I able to judge what represents "convention" and individual peculiarity in the foreign script if I have no conception of the school copy currently in force in the country concerned. Otherwise, there is the imminent danger that much -- measured in terms of German handwriting models -- that would be evaluated as individual deviation is in reality conditioned by the foreign handwriting model or writing habits and is thus diagnostically valueless as a characteristic in identification. To draw upon such "deviation" for the purpose of identification would thus be erroneous. Accordingly, those who intend to concern themselves with an identification of foreign-language scripts must first orient themselves with respect to the handwriting models and habits in force in the country in question. As an example, it might be mentioned in passing that the Anglo-Saxon scripts know of a connected and nonconnected writing style beside one another, so that the question of connectedness cannot be measured and evaluated simply by means of our standards. It is a like matter with respect to the size of individual letters, e. g., the famous "Y" [sic], the English equivalent of the German "ich" [I]. These questions have gained considerably in importance in Germany, since so many foreigners have come to the country as members of occupation forces.

While stenography cannot of course be classed under school copies, it can nevertheless in a broader sense be classed under writing models. Stenography can above all play a role which previously has not been fully exploited if it is constantly used beside italic script, for example for private notes, particularly if the writer has already learned stenography in his youth. The degree to which stenography can also influence the development and formation of one's habitual handscript is manifest in the fact that the usual stenographic systems first of all train one to give strict heed to pressure, since vowels are often indicated by means of pressure, and in the fact that these systems for the most part compel the writer to write quite connectedly and, finally, to heed well keeping to the line, since much is expressed through the high or low positions of letters. Accordingly, it must be reckoned that such writers find it easy to modify or adapt pressure, connectedness, or keeping to the line, or at least find it easier to heed the foregoing processes, in general being quite adept. Whether in the case of a falsification individual characteristics or forms of a stenographic system with which the writer is fluent could creep into the disguised or copied handwriting is not known by us. A relevant investigation by means of our method might perhaps prove rewarding. (Brunner's article, Ztschr. f. Menschenk., 5, page 101 f., is not very satisfactory in this respect, since here only a diagnosis of forms is made.) In passing it might be mentioned that those who hold quite closely to the school copy give closer heed to pressure, connectedness, and keeping to the line than do others, since the school copy prescribes an exact interchange of upstroke and downstroke, connected script, and straight line.

2. Movement and Formational Forces; Tendencies

Life is motion. Just as the lowest organisms have the impulse to move, so in the case of human beings there exist the most primordial urges or impulses -- which are still quite deeply rooted in their physical being -- to carry out actions by means of movements. This primordial movement impulse is even expressed in the scribbling of the child, and such scribbles, as shown by Minna Becker, are of a quite individual nature. Later, in school instruction these movement impulses are intercepted and curbed, so to speak, but in no way completely suppressed. There then occurs the phenomenon mentioned above, i. e., the writer more or less absolves himself from the school copy. Thus, the original movement impulses make their appearance once again in writing and become active, even though no longer completely free, rather now guided by the remembrance of and the unconscious adherence to the copy taught in school. This movement impulse, whether in dependence on the school copy or nonconformity, now passes to something beyond the mere movement: a creation of forms, of course not only the reproduction of those of the school copy. Thus, we should have to differentiate between the primordial movement impulse, the movement impulse which is activated on the writing space, and the attempt to create form. In the main, all this occurs above all in the realm of the unconscious. However, the writer is at least partially conscious of the control exerted by the school copy, and the conscious will to create now assembles with the unconscious creative impulse. These differentiations, as theoretical as they may appear, are of great importance for the practice of the identification of handwriting, as the discussion of handwriting characteristics will attest and render comprehensible.

Thus, in the course of development of an individual's handwriting, "the play of impulses becomes limited through the medium of the will" (Axel (Klages), Graph. Monatsheft, 1940). A quite conscious, purposive will to create is directed toward the production of certain forms or other writing peculiarities, e. g., the vertical or lateral extension of script. Such sharply-defined ideas, which of course indicate unexceptional deviations from the school form, are partially primordially character-conditioned, perhaps called forth by a desire to assert ones self, or by an aggressive tendency, or by a striving resulting from the activation of the imagination. On the other hand, perhaps they have been assumed outwardly, e. g., from other scripts, because such were pleasing to the writer or appeared suitable for him as a means for carrying out a desired outer effect, e. g., to make an imposing impression. In the course of the development of increasing writing ability a further change now occurs. The production of the script, as well as the latter's originally consciously-formed or assumed characteristics, become more and more automatic, i. e., entirely or to a certain degree, the formation of the forms and characteristics of script again occurs in accordance with regressions to the unconscious. As a matter of fact, in writing, the deft writer concentrates above all on the content of that which he writes. For the most part, the production of script, i. e., the direction of ones individual or movement strokes which make up the forms of letters, lie within the periphery of ones consciousness.

With respect to falsification, be it a disguising, copying, or alteration of handwriting, a fully conscious will to create and originate, purposively directed toward the production of quite specific forms, as well as a will to suppress ones own handwriting forms,

now in turn assumes control. This also applies to the criminal intent of the falsifier to perpetrate a falsification. (The unconscious and undesired alterations of handwriting in falsification occurring through the so-called stiffening of style will be discussed below.) Thus, in this connection, a process similar to that of learning to write in which the will of the teacher compels the pupil to consciously imitate the forms written out as examples occurs; only in the case of the falsifier the compulsion is exerted by the writer himself. However, as in the former case, the unconscious individual movement and creative impulses occur very quickly and compel an alteration of the school forms; in like manner, in regard to the disguising or imitation of handwriting, the repressed writing impulses, movement strivings, and creative forces never allow themselves to be completely suppressed or deflected for long. Likewise, in regard to the constituents of the falsifier's handwriting which were not original with him but were outwardly assumed and later became ingrained, constant writing habits, such suppression or deflection is impossible, above all when these constituents have become organically interwoven, so to speak, with his usual handwriting style. Thus, in falsification a constant struggle occurs between the primordial, inherent powers and strivings, as well as between the writing habits on the one side and the conscious, formative will to falsify on the other. Almost invariably, the result of the falsification will only consist of a predominance of one or the other power. For the total victory of the creative powers and habits natural to the falsifier would indicate the complete miscarriage of the falsification -- a case which unfortunately occurs but infrequently and which of course makes easy work for the identifier. On the other hand, the complete victory of the will of the falsifier is only approximately conceivable; here the difficulties of a falsification

of handwriting are too great. This difficulty is often underevaluated. With respect to the disguising, copying, or falsification of a script, it is not a question that the falsifier could be satisfied to simply exchange his naturally-executed script forms for other letters, as in a letter case, i. e., to omit his own forms and substitute therefor other self-devised letters or letters assumed from a model or from the script to be copied, as this might appear to the naive observer or perhaps even to many handwriting experts. Rather, in order to disguise his handwriting into unrecognizability, or to produce a perfect copy, he would have to alter the entire movement of his handwriting strokes, for the forms flow from handwriting movements, no matter how accurately the forms are copied. Thus, the falsifier must consciously grasp at the roots of his own movement impulses, so to speak; it is not possible for him to grasp at the end products -- the finished letter forms. As must be emphasized again and again, these movement impulses originate from the deep strata of the unconscious where they are connected with physiological processes, for all movements are fed from these hidden sources. Ever one knows how difficult it is to arbitrarily alter for a longer period of time other natural movements outside of handwriting movements, for example, ones gait or ones gestures, or to imitate those of another, without caricaturing oneself or the actions. A complete suppression or total deflection of these inherent movement impulses, and the results and types of movements flowing from these impulses is never fully possible; neither is it possible in handwriting. "As soon as the falsifier finds it necessary to compel himself to carry out a quite unfamiliar series of movements, his pen will continuously err from the direction of movement forcibly striven for; thus, uncertainties constantly occur in the manuscript, revealing the falsification" (Georg Meyer, Archiv fuer ger. Schriftuntersuchungen [Archives for Forensic Investigations of Handwriting], 1909, page 32 f.). To this we might add that the falsifier

himself is revealed in most cases in the presence of a sufficiently apt handscript identifier. Finally, and for this very reason, the complete victory of the will of the falsifier is psychologically scarcely conceivable, because it would indicate a total oppression of the personal peculiarities of the writer. Furthermore, it is here a question of a struggle between consciousness and unconsciousness which will scarcely end with the full and final subjection of the unconscious powers. Invariably either one or the other side will gain the upper hand, but only to a certain degree. It depends above all on the extent of the strength of will, concentration capacity, and cleverness of the falsifier and, self-evidently, on the difficulty entailed in the task which he sets for himself. It is one of the principal tasks of comparative graphology to detect and establish, under the more or less thick hull which the conscious creative and suppressive powers of the falsifier of handwriting have thrown up around the falsifier's natural handwriting characteristics by means of the distortion of the falsifier's hand or the imitation of a foreign script in the factual script, the primordial powers of the movement and formative impulses of the falsifier and his handwriting characteristics which have become habitual, for these must still inwardly stir, since the falsifier will be incapable of fully suppressing them. How this occurs will be discussed later.

In this connection, a phenomenon originating in the psychology of the falsifier of handwriting should once again be pointed out. As we have seen, every artificial creation of handwriting has as its consequence a disruption of the attention of the falsifier and an ultimate languishing of the concentration he exerts in the act of writing. Whereas the person accustomed to writing executes a sentence or at least a word "in one stroke," as is said, in the case of an artificial

creation of handscript this is not possible. Saudek (Robert Saudek, Experimentelle Graphologie, 1929), who investigated this phenomenon, requires herefor the following formulation which is not in complete accordance with the foregoing but is nonetheless concrete: "In the case of the falsifier, the sentence impulse is reduced to the mere word impulse or all the way down to the mere letter impulse." Thus, in the case of the falsifier, the object of attention is the smaller concepts of the word, the syllable, the letter -- rather than the larger concept of the sentence. Hence the incoherent impression made by many falsifications through which they are often recognizable. We shall still encounter many more times this phenomenon of the reduction of the sentence impulse in the course of our investigation, and we shall concern ourselves with its consequences. Of course, one cannot expect that one will invariably succeed in being able to clearly recognize the actual impulses and powers of movement and formation of the falsifier's handscript under the hull which is thrown up by the falsification over the natural handwriting of the falsifier. It is not so that one could simply subtract the falsification constituents from the factual script in order to have before one the natural handscript of the falsifier as a resultant for purposes of identification. Almost invariably this calculation will not fully lend itself to an easy solution, particularly in the case of outright carelessly or uncleverly executed falsifications. In general an unsolved remainder will invariably exist, i. e., doubt will remain in one or the other direction. Often the identifier will no longer recognize as a whole the letter forms of the natural handscript of the falsifier which are distorted by disguise or imitation. On the other hand he will usually be able to differentiate the specific individual type and manner the disguiser employed for this distortion, i. e., he will be able to pursue the movement and

form strokes which have led to the distortion, or he will still be able to establish form details in them which are characteristic of the undisguised script of the falsifier. In general, he will of course only be capable of the foregoing if he has penetrated the actual "life history" of the factual script and the handwriting subject to identification; this explains the importance of the comprehension of the total impression, which we shall discuss in detail later. If he is successful to some degree in differentiating between the genuine and the artificial constituents of the factual script, then with the genuine he has a more secure basis for comparison with the suspected script. In this it is necessary -- and this is a particularly important principle for the identification of handwriting -- to be able to heed and to recognize which of the inherent impulses and tendencies, as well as which of the deeply-ingrained writing habits of the falsifier are actually partially suppressed, since in general there is still manifest in them individual unmistakable characteristics of the falsifier's hand.

The detection of these incompletely-effected but still recognizable forces and habits, which I call tendencies, is one of the most important, but often at the same time most difficult, tasks of a good handwriting identifier. The recognition of these tendencies and those aspects which are often termed outright faux pas forms the basis for every successful identification of a manuscript. The manner in which tendencies manifest themselves is quite diverse and depends principally on the nature of the aspiration or habit which exists in the background. For example, they can be manifest in the characteristic direction of writing strokes, or in the rhythm of the pressure used, or in the components of an individual letter, in commencing lines, in finishing lines, in upper strokes, and elsewhere;

no matter, in the completed letter forms these tendencies are recognizable. For this reason it is so very important -- and this cannot be recommended often enough to the handwriting expert -- that the detected characteristics invariably be ranged in greater continuity, e. g., the specific execution of movement or direction, the specific manner of filling in spaces, expansion, concentration, or the like. Only in this way do the greater impelling forces, which are in part hidden by the falsification distortion, really become recognizable. All these questions will become completely comprehensible only after the discussion of individual characteristics. However, it should perhaps now be pointed out that such tendencies not infrequently manifest themselves in such a way that the suppressed writing inclinations or habits appear in other places or are rendered evident in another manner. Thus, for example, evidence of strong emotion, the suppression of which is otherwise expressed in pressure, can be expressed instead in flaring ascending letters or similar phenomena. Here, from the viewpoint of depth psychology, a comparison with the consequences of a repression is perhaps relevant.

One of the most essential and for the most part potentially successful investigations of the identifier consists in recognizing, finding, and employing for identification purposes those places of the factual script in which these, so to speak, elementary forces have broken through the obstacle set up by the falsifier. When it is a question of only relatively weak indications of genuine movement or formational forces, i. e., if their suppression by the will to falsify has been successful to a large degree, this will of course be difficult. However, such unfavorable cases are not actually so frequent, and the graphologically experienced and well-trained identifier can be successful even here.

To be mentioned in closing are a few examples of such recognizable tendencies or partial faux pas. For example, if the angles and tips of an otherwise angularly-executed factual script have been modified, one can conclude that the falsifier tends toward curvedness in his actual handwriting. If a falsification is written with connecting "festoons" which harden into angular ones, then the natural hand of the falsifier will manifest angularity. If, in the case of an otherwise pressure-indicating factual script, the pressure periodically or rhythmically again and again slackens, the falsifier's handwriting will be ordinarily slack in pressure. Loose dual curves in the factual script can indicate a perpetrator who writes with a thin line. In regard to the appearance of suppressed tendencies in other places or in different manner, an example has already previously been given.

3. Movement and Formation; Letter and Identification Forms

If we are now to observe the handwriting strokes which emerge from these psychic forces which are directed in writing and their manifestation, then the treatment must proceed in accordance with that which has been asserted in regard to movement strokes on the one hand and formative strokes on the other. Of course the dividing line between both is not exactly a sharp one, inasmuch as every movement stroke ultimately becomes a formative stroke, and every formative stroke originates from a movement stroke. In writing it is of course not a question of the free play of movements or of arbitrary forms. Rather, the script develops from an interplay of the imitation of school forms on the one hand and of products of the actual movement impulses of the writer on the other.

It is true that all the forms of the script have originated from movement strokes, but the latter are movement strokes which have become forms. They are strokes which have joined and multiplied into specific shapes which can be differentiated from other shapes.

Thus, we can and we must differentiate precisely between script forms, which are clearly differentiable from other definitions in the script, and the script movements embodied in script strokes. If this even theoretically is quite clear, one should nevertheless not fail to recognize that the dividing line -- at least between movement stroke and formative stroke -- is often practically difficult to draw, since all movement strokes ultimately tend toward form in the script, and it is often not easy to say where the influence of the pure movement impulse ceases and the formation begins. In our opinion this is one of the principal reasons why many experts who do not have a clear comprehension of the essence of handwriting cling so desperately to the comparison of letter forms which they erroneously consider the sole script forms.

Movement and form have thus not sprung forth solely from diverse tendencies -- the one from movement impulse, the other from formative impulse or will; on the contrary, even in their appearance in handwriting they are quite differentiable, even though they may interpenetrate and thus influence each other, as strong movement impulse tends toward the dissolution of form and strong formative impulse tends toward repression of movement. Neither does this differentiability restrict itself solely to the completed letter forms: for example, a dot or a flourish is doubtless a form and not merely a movement stroke.

If, with respect to the identification of handwriting, the proposal is occasionally made that all forms be decided on the basis of movement strokes (as per Wittloch, loc. cit., page 216), in our opinion this postulation shoots over the mark, not allowing for the fact that such an attempt is scarcely executable at all and under-evaluates in large degree the significance of pure form in identification. That which must be attempted and attained -- and this is in support of this proposal -- is only that we comprehend and pursue the process of the origination of the completed form from the movement stroke and the formative stroke, in order thus to be able to better understand the finished form and to incorporate it in the sum total of the handwritten strokes. These questions will be discussed later in more detail in the discussion of script forms as entities.

In connection with the relationship of movement and form in falsification, it should here be emphasized, as has been indicated above, that the will to falsify above all embraces completed forms, rather than movement strokes or strokes leading to formations. One explanation for this is the fact that the completed forms of his own or those of the script to be imitated are most striking to the falsifier -- much more than those writing strokes which have created forms and of which these forms are, so to speak, composed. Another explanation is that the disguiser or imitator works with his conscious will which above all will be a formative will, passing over in the main the more or less unconsciously carried-out movement strokes of his own script or the foreign script, since every falsifier believes that it depends on an alteration or imitation solely of forms -- above all of letter forms -- in order to attain a successful disguise or copy. The free play of movement in writing,

which in the case of the writer of a natural script which is in conformity with his natural tendencies is only limited by the recollection and observance of school forms, in the case of the falsifier is limited and hindered from the start by the clandestine and deceitful intention, in addition to the foregoing influences. On the one hand, this has the effect that the true movement strokes of the falsifier are often not clearly manifested; of course this renders identification difficult, since such strokes are then difficult to recognize in the falsified manuscript. On the other hand, neither is the falsifier able to continue indefinitely any radical alteration of his natural movement strokes. Thus, to the extent that such are recognizable in the factual script, they will manifest a definite indication of the true hand of the falsifier, at the same time pointing out the importance of considering them in evaluation of the factual script and also the script subject to identification.

Now that we have attained to some extent a clear perception of the relationship of handwriting movements and handwriting formation and their importance in handwriting identification, we must detail further the question already raised of the difference between script form in general and letter form in particular. This we must do not only because it is necessary for an understanding of the origin of an individual manuscript, but principally because this question is of fundamental importance for the practical execution of the forensic identification of handwriting.

Certainly handwriting, as we learned it in school, consists of the formation of letters. Nevertheless, it does not consist wholly of such. Even if we disregard for a moment the fact that writing consists principally of movements, and regard solely the origin of form, it must nonetheless not be overlooked that formative

impulse and formative will are manifested principally in letter forms in the sense of the writing copy, but that they are not exhausted in nor limited to such manifestation. Otherwise, the unending abundance of formations appearing in handwriting would be quite inexplicable. Rather, letter forms are, so to speak, only starting points and limits within which formation is manifest. Nonobservance of this fact in the identification of handwriting has educed a superstition which has prevailed since the rise of the practice of handwriting identification and, as any superstition, is scarcely to be rooted out, since its presumption is that identification treats exclusively of the comparison, examination, and evaluation of letter forms. (This superstition has penetrated into the literature as well. Cf., for example, Schneeburger, Schriftexpertise [Handwriting Expertise], which advises the systematic comparison of majuscles and minuscules.) To what downright inferior judgments such a mere comparison of letters can lead is shown by our daily practice. It is no wonder, for of course such a limited and outright primitive comparison makes possible only a quite crude, superficial, and uncertain judgment. In order to root out this superstition which holds the identification of handwriting as a pure comparison of letters, a thorough understanding of the concept of script form is necessary, and hereby it becomes obvious that the concept of form in script can in no way be equated to that of letter form.

In order to make this clear, we shall next go back to an example already used in another context, viz., stenography, a type of script which many of us use daily in addition to its so-called running hand, often not only for the usual purpose, but also as a means of communication with others who have mastered the same system.

In stenography, writing does not consist solely of the formation of individual letters. Here -- at least in the case of the systems known to me -- each individual letter is not separately formed and written out: for example, vowels are usually represented by the exertion of pressure or by placing the next symbol higher or lower in relation to the line. Further, many syllables or words are contracted into abbreviations -- so-called logograms. Thus, one cannot refrain from likewise designating stenography a kind of script. Should one voice objection to this example and maintain that this is not the case with respect to running hand, it should be pointed out that also to be found in very many ordinary scripts are forms which cannot be called letter forms. Let us stop to think, for example -- proceeding again from the viewpoint of stenography -- how many writers nowadays employ logograms in the execution of letter connections in such manner that the individual letter no longer is recognizable as such, or how some personal signatures no longer represent detailedly differentiable successions of letters, but rather mere abbreviations -- monograms, as it were. At any rate, such examples make it obvious that the significance of letter forms in handwriting cannot be overestimated. Analytical graphology has long recognized this fact. Even in the case of the older school, "signs" are by no means limited to letter forms; Crepieux-Jamin, for example, has pointed out the significance of constituent strokes and flourishes, i. e., the constituents of letters. With respect to the present-day art of interpretation, reference is made to the dictum of Heiss (loc. cit., page 34): each stroke and each individual sign in handwriting is of significance, even though its exact significance is derived from the entire handwriting picture. Only in the identification of handwriting are the "true believers in the letter" unconvincible and inconvertible. Even though, for example,

in the evaluation of the manifestations of ascending or descending strokes, regardless of which letters they are part of, analytical graphology considers the width or narrowness of loops, i. e., letter graduations, in the characterization of a manuscript as full or thin, it would nevertheless be quite nonsensical on the part of the identifying handwriting expert, if, due to a superstition or a misunderstanding of the concept of form, in the identification process he were to refrain from drawing out every aspect from the manuscript under investigation which could be serviceable or in any way suitable for evaluation. In particular, he should have a clear perception of the fact that those forms which represent incomplete letters tend to be much less dependent on the writing copy, for the most part expressing much more individuality than those which do depend on such copy. Herewith, in many cases, the comparer of mere letters is at once at a loss as far as further know-how is concerned. Let us consider for a moment more or less illegible manuscripts. How shall he compare letters, if he is not even able to establish accurately of what it is a question in the individual case? Or in cases in which the manuscript is so run together that one does not know where the one letter ends and the next begins. We have already mentioned personal signatures. One will attain as little in a comparison of letters in the case of manuscripts which depend so strongly on the school copy or some other writing copy that the letters, considered as total forms, are now scarcely differentiable from the very forms exemplified in the copy. Here, only the comparison of letter details can be successful, overlooking the examination of the other important characteristics. It is a like matter with respect to the alterations of a manuscript for deceitful purposes. Not only in regard to the position, size, and width of handwriting is one's attention directed to the comparison of letters as such, since here the length of upward and downward strokes, of connective strokes, or of the trending angle of downward strokes is invariably decisive.

Those cases in which solely letters are compared are rare. This is also the case in the investigation as to which script system the perpetrator or suspect employs, or which letter variations are manifest in a handwritten specimen.

Therefore, it must be pointed out with all emphasis that the comparison of forms is of the greatest importance for the identification of handwriting; but that such must not necessarily be limited to the comparison of outwardly conspicuous specific types of script forms, i. e., of letter forms, or that such must above all be dependent on such forms. Thus, by script form in general -- and above all in the sense of comparative graphology -- must be understood each manifestation of any one form in the script, regardless of whether this formation renders whole letters more or less in correspondence with the school copy, or an independent or dependent part of a letter, or some other handwriting sign. To be mentioned as examples of independent letter constituents are all upper strokes, e. g., dots over "i's," or U-shaped curves; of dependent but formed letter constituents, flourishes or other additions; of other writing signs, all punctuation marks, e. g., periods, commas, etc. Likewise, underlinings or cancellations, if they are characteristic in form, can be designated script forms. On the other hand, small insertional or recommencing hooks or jots cannot be designated forms, but rather as preformations or postformations, because they do not issue forth from any formative will. Accordingly, we will treat of them in more detail below in relation to movement strokes.

We thus make a sharp distinction between letter forms in particular and identification forms in general, of which the former form only is a subvariety. Identification forms likewise coincide

only partially with identification characteristics (to be treated later), since the characteristics of the movement and spacing picture also fall under the latter, as is the case with the aforementioned preformations and postformations.

With respect to the demonstrative value in the identity question of those identification forms which do not manifest letter forms, in relationship to letter forms, it can be said in anticipation that the former will be the more demonstrative -- at least as a rule -- since letter forms, consciously or unconsciously, are almost invariably formed with more dependence on the school copy. However, characteristics which can be traced to a common school copy are usually less demonstrative than those which are still dependent to the strongest degree on the movement strokes from which they originate. These latter are often produced by an unconscious formative impulse, as is often the case with the identification forms which do not represent letters.

Of which forms is it a question in individual identification forms? How and where are they to be found in letters? What is the extent of their importance in identification processes? All these questions will have to be discussed in detail in the treatment of form peculiarities. This also holds true in the case of the question as to which of these forms are implicated -- and to what degree, in accordance with previous experiences -- in falsification.

4. Acquired Handscript and Falsification Characteristics

As we have seen, a handscript does not consist only of writing movements originating from natural writing impulses, and of the forms thus produced; rather, a handscript is a very complicated process. The completed handwriting of a person consists,

so to speak, of diverse overlapping "strata," which, however, have become an inseparable unit in the case of the literate person. One may say that the lowermost stratum forms that which has been learned in school in accordance with the writing copy. The second is that which the forces of the most personal types (described in the previous section) have made of the handscript derived from the school copy -- usually a formation of a quite different and much more individual type. However, almost all writers tend to "polish" this handscript which is complete in itself. Whereas previously the origin and development of a handscript proceeded more or less unconsciously, a conscious formative will now sets in, affecting a further alteration of handwriting and laying, so to speak, a third strata of handwriting constituents over the previous script. This conscious formative will -- it is here above all a question of alterations of form, rather than pure alterations of movement -- is guided by a visualized or real model, the so-called "guiding picture" (see Note following) which it seeks to assimilate or approximate. ([Note] Cf. Axel (Klages), "Theory of Graphological Principles," Graph. Monatshefte [Graphology Monthly], 1904; Klages, "Expressive Movement and Formative Power," "On the Theory of Expression and Characterology," "Handwriting and Character," the chapter on acquired handwriting.) The polisher of one's own handwriting is for the most part unaware of the model which guides him; thus, Klages also defines the guiding picture as the unconscious choice-relationship of specific forms, movement forms, and strata. These guiding pictures can be quite diverse; for example, they can be oriented above all in accordance with aesthetic preferences and tendencies; in this case an ornamental script or a script stylized in some manner often develops. Or they can be motivated by the predominant

influence exerted by one writer on another who has not yet fully developed his handscript, e. g., a beloved father or a respected teacher. This can then lead to a so-called psychic identification, e. g., the son writes a script identical to that of the father, the pupil a script identical to that of the teacher, to a point of nondifferentiability. However, this also occurs in the case of grown-up literates: I am here reminded of the case of a man and wife happily married for a decade. Of course these are extreme cases. Usually, the acquisition of new strokes, or above all of forms, can be traced to the fact that the writer has been especially pleased with some aspect of another handscript due to a secret "choice-relationship." He then assumes this aspect in similar manner in his own handwriting, be it a letter form or only a manner of connecting two letters, or a part of a letter, perhaps a commencing stroke, a finishing stroke, or a flourish. (Examples of acquisitions from foreign scripts are adduced by Foerster in Ztschr. f. Menschenkunde, Vol 15, page 34.) Or an alteration can occur in the absence of a direct model. The writer can polish or alter his handwriting in such manner that it simply corresponds to a wistful dream or an intentional "placard" effect, perhaps for the purpose of evoking the impression of handsomeness or of power, even though it may not suit his personality at all. These supplementary alterations and modifications of an otherwise complete script usually occur unconsciously, but they quickly become automatic. The writer usually forgets very quickly whence he has acquired them and that he has acquired them in the first place. They are produced along with the other script constituents in the writing process existing below the threshold or only on the periphery of the consciousness. Incidentally observed, the expression coined by Georg Meyer, viz., "the automatism of

handwriting," has not been chosen any too aptly and is a misnomer, inasmuch as here it is not a question of an automatic process, but rather of an ingrowth in the animate rhythm of handwriting.

Klages, who has represented these processes in a classical manner, makes a quite justifiable and, as far as we are concerned, very important distinction with respect to these acquisitions of originally foreign script constituents, viz., appropriate and non-appropriate acquisitions. In the case of the first it is a question of such which correspond in every way to the character and essence of the acquisitioner, i. e., "acquisitions" which he himself might well have originated in his own handwriting, but which he may have been incapable of, due to a certain paucity of imagination in regard to the formation of script forms. These acquisitions will then find their way directly and naturally into the remainder of the writing picture, without disturbing the unity or organic impression of the latter. It is a different matter with respect to those of the afore-mentioned acquisitions by means of which the writer -- of course generally being unaware of the process -- wishes to demonstrate something which he actually lacks, something which he perhaps wishes in secret, or something which he aspires to possess. For example, it might be the innumerable manifestations of an exaggerated need for self-assertion which goads one to demonstrate power, strength of will, intelligence, self-assuredness, superiority over others -- in short, a desire to appear as more than one really is. A person of hysterical character, in accordance with the specific need felt, will be capable of assimilating all possible foreign constituents into his own handwriting, and thus of playing in theatrical manner the most diverse roles. Such nonappropriate acquisitions are now of course foreign and will remain foreign.

Accordingly, they will not be organically interposed into ones previous handscript. Indeed, they become just as automatized as other acquisitions, but they will -- at least from the usual viewpoint of graphology -- in one way or another not find adaptation in the remaining totality of the script; the script is then not "genuine" in the sense of the judgment of character. Of course this genuineness or nongenuineness in the characterological sense has nothing to do with such in the sense of the identification of handwriting, and a conceptual confusion is here impossible, even though a practical confusion in the judgment of their phenomena is possible. Nevertheless, in both cases it is a question, so to speak, of artificially cultivated constituents of the original handwriting natural to the writer. Subjectively, they are of course quite differentiable. He who assimilates foreign script constituents into his own handwriting in order, let us say, to attain a placard effect will belie individual character peculiarities, usually he will do this unconsciously. As a rule the more deeply-lying reason for this acquisition is unknown even to himself; often it is a case of self-deceit. On the other hand, the falsifier will not represent himself as what he is, but as something which he is not, i. e., he will represent another person, not a different psychological personality. Moreover, he will do this quite consciously and with the marked intention of deceit with respect to his person, i. e., his identity with the writer of the script in question. Leaving the foregoing out of consideration, the acquisitioner of nonappropriate foreign script characteristics has the intention of maintaining these extractions as permanent acquisitions; the other introduces the deformations or imitations into his own script, or the alterations into another script, only for the purpose of one sole falsification, even though its repetition may be envisaged, as in the case of the writer of a series of anonymous papers.

But are these deep-lying differences in the nature of both types of alterations of a natural script and the quite different intention of the writer who may use them also expressed in the objective phenomenal picture of the script?

This appears quite doubtful, since permanent acquisitions, to the extent that they are nonappropriate, of course have not become organic constituents of the natural script. In our opinion, the criterion could exist in the greater or lesser degree of integration into the original script. Nevertheless, acquisitions for the purpose of a permanent alteration of script are automatized and assimilated into the natural flow of movement of handwriting, particularly in the rhythm of this flow. However, this is not the case in regard to script alterations derived from disguise, imitation, or falsification. Moreover, alterations provoked by falsification are of a much more violent nature, and, as such cultivated violations of the natural script, they will find less adaptation in the natural script and will be more recognizable as foreign constituents than the permanent acquisitions which have found much more integration in the writing picture. Of course in many cases this will scarcely any longer be recognizable. Take, for example, imitations of no great extent of a foreign script, in the case of which it will be difficult from the start to distinguish which are natural script constituents and which are falsified -- or, as another example, very strongly disguised anonymous writing. Here it will often not be easy to decide whether it is a question of an acquired script peculiarity which does not integrate consistently into the remainder of the character picture -- a peculiarity which concerns only analytical graphologists, but which is genuine in the sense of the identity question -- or whether it is rather a question

of an alteration of natural handwriting induced by falsification. This decision appears all the more difficult if one hereby still holds that not all the script characteristics inconsistent with the total character must of necessity be assimilated from without or by way of addition, for indeed the sharpest inconsistencies may be present in the most primordial strata of a character. Thus, there will be many cases in which it will scarcely any longer be possible for even experienced and careful graphologists and handwriting identifiers to distinguish falsification constituents from inappropriate acquisitions in handwriting.

This question will then be without essential practical significance, if the same inorganic script constituents are to be found in the same manner in the factual script and the script subject to identification. As a rule it can then be assumed that it can here be a question of nonappropriate permanent acquisitions of the genuine script, and that these then form a direct and important point for comparison.

However, on the other hand, if nonappropriate acquisitions of such type are not to be found in the script subject to identification, the danger exists that the constituents in it which are not in conformity with the remaining total character of the factual script, and which are nonappropriate acquisitions, will be considered falsification characteristics, and that their lack will then not be considered in the script subject to identification, although in reality under certain circumstances they can induce extremely important evidence in the negative sense, precisely because perpetrator and suspect are not the same person. This oversight can thus entail difficult consequences, in that in weighing the grounds for or against the personal sameness of falsifier and suspect it can unjustly influence the identity decision.

In our opinion, only one thing can remedy this situation. In the examination of the total impression of the script subject to identification, with which the actual process of identification begins and which will be discussed more detailedly later, the identifier from the start must give attention as to whether it is here a question of a genuine script, speaking from the viewpoint of interpretation, i. e., whether the script is, so to speak, the genuine expression of a uniform and unambiguous character and, in general, whether this script appears organic and homogeneous in its graphical totality. If this is not the case, then it must be accurately determined which foreignlike characteristics and which characteristics that are in inconsistency with the true essence of the writer are present in the script -- characteristics which can be regarded as nonappropriate acquisitions. These must then be compared with corresponding phenomena in the factual script. Often this examination will not be easy; however, a fine delicacy of feel with respect to whether script characteristics are genuine or non-genuine in both senses, i. e., characterological and in the sense of falsification, represents the main prerequisite -- in addition to a sharp observational capacity -- with which one must be equipped if one wishes to be a good handwriting identifier. Moreover, accurate examination of the script subject to identification, in accordance with the afore-mentioned viewpoints, seems to us the sole possibility for the avoidance of those errors which can have a quite ominous effect.

5. Unintentional Alterations in the Falsification of Handwriting; "Stiffening"

We have now seen how an individual handschrift originates naturally and alters, and how conscious falsification imprints

itself upon further alterations. Now we must finally treat of very important alterations which originate as such only through falsification, but without the knowledge and will of the falsifier.

Previously we have only spoken of how the falsifier intentionally seeks to alter and actually does alter his own handwriting, i. e., the other forms which the script disguiser chooses consciously; how the imitator copies foreign strokes and forms, in order to feign that such were executed by the creator of the script imitated. Thereby, we have further represented the forces which the falsifier musters for the purpose of falsification; how inborn impulses and inrooted habits again and again break through their barriers; the extent to which the falsifier is capable of suppressing them; the extent to which he is here capable of imprinting consciously and intentionally other strokes and forms of his true handwriting in order to attain the aspired falsification effect. Thereby, however, we have not yet brought up the question as to whether, through the falsification activity, as such, the natural handwriting of the falsifier becomes altered without the knowledge and intention of the latter, in a direction which has nothing at all to do with the falsification alterations striven for by the falsifier. However, this is in fact the case. Hereby it arises that we cannot regard the factual script exclusively as a consciously-intended concoction of the disguiser or imitator. We would thereby observe it from a one-sided and slanted point of view; we would forget that with respect to its origin and formation forces of pure physiological movement were present -- forces which have nothing to do with the conscious will of the falsifier, or rather have been set in motion by that will.

It has long been known that unintentional -- even by the falsifier -- so-called incidental effects can occur. In his experiments in 1900, which we shall discuss later, Georg Meyer found that the falsifier involuntarily writes more conventionally; that with respect to the productiveness, speed, and pressure of a handscript, if one aspect increases, the other also increases, since they are all dependent on motor impulse. He pointed out that nonhabitual endeavors are executed with unnecessary force, and thus believes that every copy of a script is larger than the original. Not considering that the latter assertion appears exaggerated in accordance with our experience, his observations by and large are quite justified. Klages, who therefrom formulated a basic law of incidental effects, emphasizes that certain unintentional incidental effects occur in every intentional remodelling of a script. These are attested by increased efforts, e. g., in particular, arrangement of the total impression, accumulation of interruptions, and increase of emphasis. Accordingly, the following tend to increase: regularity, narrowness, pressure, and connectedness.

By and large, all these observations and finds are thoroughly justified, but they by far do not exhaust the entire encompassment of the problem here in question, for the field of unintentional incidental effects is much broader. In actuality, not only do individual characteristics become altered in the remodelling of other characteristics; rather, a kind of total alteration of the entire script occurs solely through the unnatural attitude assumed in disguising or imitating a handscript. The importance of this fact for the identification of handwriting is obvious; for therewith the entire constructive method of proceeding, which is decisive for such identification, is shifted, or is at least extended. Now it no

longer suffices for the identifier to ask himself: which characteristics can the falsifier produce or alter consciously, and which handwriting characteristics simultaneously become altered in the remodelling of specific individual characteristics? In particular, it must each time be asked in addition: which alterations are sustained by the handwriting of the falsifier in the falsification through the artificiality of the creation of the handwriting, as such, apart from his conscious script remodellings?

For the knowledge of these phenomena and their causes, which center about the concept of "stiffening," we are indebted to Rudolf Pophal (cf. principally "Handwriting and Cerebral 'Script'" and "On the Psychophysiology of the Phenomena of Tension in Handwriting").

It was he who, by means of his investigations principally in the physiology of movement, penetrated into the essence of handwriting and who thereby not only brought the art of interpretation decisive incentives, but gave the identification of handwriting entirely new points of view. These latter have nowhere been appreciated as to their true value, and their importance to us is shown not only here, but also in the clarification of the concept of characteristics. Now what does he understand by the concept which he calls "stiffening?" In the natural back-and-forth movements during writing, the muscles, which are designated active and counteractive, work in periodic, rhythmic succession. In stiffening, the active and counteractive muscles are equally contracted; movements proceed in accordance with active participation of the counteractive muscles. There are various degrees of stiffening. Even normal writing cannot occur without stiffening. With respect to natural, optimal, so to speak, handwriting, there is proper disinhibition, i. e., looseness, or proper inhibition, i. e., binding. Here, the writing

is flowing, elastic, and svelte, and, as is otherwise said, controlled. In the case of too slight stiffening, the writing is unsteady. On the other hand, in the case of overstraining, a too strong, i. e., improper, inhibition, or a faulty disinhibition, occurs. Now Pophal asserts -- and this assertion is of especial importance for the identification of handwriting -- that every artificially created manuscript bears the signs of such stronger stiffening. By stiffening in this sense and in this degree, from the viewpoint of the physiology of movement, is to be understood the phenomenon that all the muscles which surround the joints of the fingers, hand, and arm, i. e., active and counteractive muscles, are in a state of disordered contraction. Such strained and overstrained writing signifies an inhibition of the entire series of movements in the act of writing; occurring to a stronger degree, it results in a rigidity of the execution of movements in writing. Leaving the foregoing out of consideration, it attests a false, unnaturally ascending and descending, i. e., unrhythmic, pressure. Such stiffening of a stronger degree now occurs as a rule in the case of every falsification, in that the falsifier draws himself together in order to complete the writing the purpose of which is to provoke the impression that it was written by another, for this very "drawing together" attests the afore-mentioned contraction of the joints.

How is the influence of such improper inhibition and faulty disinhibition graphically expressed? The signs of such stronger stiffening of handwriting are principally the following: exaggerated regularity to a point of rigidity, irregular stroke interruptions and patchings, backstrokes, increased carelessness toward the center, decreased right or left fluency, unnatural pressure,

often rigid angles or school-like connectedness, narrowness, ascending lines or lines sloping to the left, unnatural increasing or decreasing of size, unconnectedness, thinness, sharpness, great diversity of length, dependence on school copy. Naturally all these handwriting characteristics must not of necessity occur simultaneously.

However, upon closer observation of these characteristics it arises that the majority of them are such that could just as well have originated through the intentional formations of the conscious will of the falsifier, and that they often occur in that the handwriting falsifier alters his hand when he seeks to disguise it. To determine whether they are the results of strong stiffening, or were consciously created by the falsifier, or are to be found in his natural hand, will thus at times be scarcely possible.

It is thus by no means so -- as is held by the layman and many experts -- that every alteration of handwriting, produced for the purpose of falsification, must invariably of necessity be consciously produced by the falsifier. For the very reason that the falsifier draws himself together for the purpose of creating the falsification, thereby assuming an unnatural attitude, whereby an improper muscular contraction occurs, transformations of handwriting occur in quite considerable extent. Doubtless this fact signifies a certain increased difficulty of the task of handwriting experts who compare scripts, for if they have fortunately penetrated through the hull which the conscious and intentional falsification has drawn up around the handwriting of the falsifier, then they will only have burst the armor which, independently of the

will of the falsifier, the stiffening has brought about. This thought could confuse or even discourage many an expert, but there is no real need for this, as we shall soon see.

We should next like to point out -- with no intention of questioning in any way the findings of Pophal -- that, in accordance with the experiences of forensic practice, the degree of such stiffening, as it occurs in falsification, also depends greatly on the peculiarity of the personality of the writer. Even though, in the production of disguised or imitated handwriting, every falsifier is, and must be, tenser than he would be in writing nonchalantly, this nevertheless occurs in so slight a degree in lesser disguises of handwriting and in unconcerned, reckless writing in falsification, that such writing can scarcely be designated as actually stiffened, and these cases, as we have already seen, are not at all rare. Or a writer may have practiced so well the handscript which he intends copying that he can sign checks or letters of credit or forge a will so smoothly and fluidly that he need not press too much with the pen. It will be a similar case with the handwriting disguiser who has practiced a certain style of disguising. In all these cases only a slight stiffening will be perceptible (in general, stiffening degree No IV, in the sense of Pophal, will be manifest in falsifications; in exceptional cases, stiffening degree No III). On the other hand, in the case of particularly unskillful or excited falsifiers, a full cramping can occur, i. e., a failure of the inhibition mechanism as a result of overstraining -- a phenomenon which we shall discuss later. As a rule, it remains that every artificial creation of handwriting, i. e., every falsification, is bound with a strong stiffening. In the case of a strongly stiffened, demurred handscript, one may presuppose that it

could have been falsified, and in the search for the true script of the falsifier and thereby for the latter himself, the stiffening characteristics, as such, will invariably be considered, i. e., they will have to be eliminated and, so to speak, drawn out.

With respect to the general role played by stronger stiffening in the comparison of handwriting, it is further to be emphasized not only that its occurrence represents a rendering difficult of judgment, but also that the consideration of the stiffening phenomena on the other hand renders easy the advance to the natural script of the forger. As is represented in detail in the presentation of the execution of our methods in the second part of the book, one of the principal tasks of the identifying handwriting expert consists in detecting those places in the factual script in which the forger has, so to speak, stepped out of his role as an actor, i. e., those places in the writing in which his own natural hand has found its way into the forged concoction. These handscript constituents are now the easiest and most certainly recognized, in that they manifest lesser stiffening than does the remaining script. To a higher degree, they will be fluent, elastic, free-flowing, and energetic in movement; more strained in stroke; more natural in rhythm; and exaggerated neither in size, smallness, nor in regularity. Through all this, a practiced glance will find them conspicuous in relation to the otherwise more strongly stiffened handwriting; thus, a direct comparison with the script of the suspect is made possible.

Finally, another purely practical observation on the seeking-out and elimination of stiffening characteristics. As we have seen, we shall often not be able to accurately differentiate between

characteristics resulting from conscious remodelling and characteristics resulting from the influence of stiffening. However, this fact in no way need influence adversely the result of the comparison. For indeed we are ultimately seeking -- neither the falsified script nor the stiffened script -- but rather the natural handwriting of the falsifier which lies behind both and which will identify his person to us. However, as a rule it will little suffice for this end purpose of the identification of handwriting, if we are occasionally in error as to whether we find in a specific script characteristic one caused by conscious falsification or one effected through increased stiffening, or if we clearly and perceptibly distinguish it from the natural script of the falsifier only as an artificially created characteristic and can eliminate it in the final judgment.

IV. The Standards of the Identification of Handwriting

Now that we have pursued the origin and development of an individual manuscript and its alteration through falsification, and have thereby discussed the problems which are raised in this consideration as special questions for comparative graphology, we now turn to those aspects which turn up in the treatment of the question and those standards which are relevant in its domain, i. e., that with which we are actually able to carry out the comparison of factual script and the script subject to identification.

In physics, for example, the following are recognized as units of measure: the gram as a unit of mass, the centimeter as a unit of length, and the second as a unit of time; in the metric system the meter and the kilogram are recognized as measures for mass and weight. Such absolute units of measure and standards are not available to us in the identification of handwriting for the very reason that in

handwriting it is a question of sizes and forms which do not always turn out similarly in the case of one and the same writer, leaving out of consideration the fact that it is here a question of quite different, quite unmeasurable phenomena. We should never forget that for us the investigation of the writing picture is not an end in itself, but rather that we seek in it the living person in the background whose creations or productions are the scripts to be compared; that we actually find ourselves in the field of psychology and physiology. Thus, we must look about for standards which are in conformity with these sciences; and in the arts -- we find ourselves in this field in the case of graphology -- there are no absolute standards; here one does not count or measure, rather one evaluates.

1. The Problem of Similarity

Which standards are we offered for the comparison of handwriting? If we should proceed in accordance with the original meaning of the word "comparison," we might be of the opinion that it is here a question of the comparison of like things. In actuality the laity commonly believes that one and the same creator of a manuscript can only be determined in the presence of the sameness of various scripts in their essential forms. However, by closer reflection, it will become quite clear to even the laymen that it can here only be a question of sameness in an exaggerated sense. A sameness in the strict sense is only present in abstraction. Geometrical forms of the same form and size, for example, are actually identical in the abstract science of mathematics.

Nevertheless, there is no sameness in all living things. The words of Goethe are pertinent for the entire domain of living things: "All forms are similar, but not one is the same as the other" (Die Metamorphose der Pflanzen [The Metamorphosis of Plants]).

Yet, after all, handwriting is something originally animate. It is at least the expressive phenomenon of a living being, at least the product of animate movement. Since Klages, in regard to the consideration of the rhythm of handwriting, it has always been pointed out that it cannot here be a question of invariable, repetitive successions of like things in like periods of time, as in musical time, but rather of similar things at similar intervals. Thus, two naturally-produced writings can never be identical, even though written by the same writer. Here, in particular, such sameness between a natural and an artificially-created manuscript, even in essential parts, does not come into question. Even in the case of traced writings one cannot speak of an actual sameness; neither the strokes of the direction of line or the distribution of pressure will be the same as those of the original. Here, in particular, in the case of a falsification through copying by free hand, a sameness is never attained; invariably, the direction of movement strokes, the intensity of pressure, the connectedness of letters, the details of their formation, and so on -- be it a case of the finest details -- will be differentiable from each other.

Thus, in reality, in handwriting it is invariably a question only of similarities -- never of sameness. We have now come to the subject of the concept of similarity, and we shall see whether or not this can serve as a suitable standard for the forensic identification of handwriting. It is commonly said that the more similar two writings are in their totality or in their individual forms, the more certainly is to be determined the identity of their creator. Accordingly, in identification opinions, it is continuously a matter of the discussion of the similarities of the writings to be compared, above all of their forms. Many authors, as well, seem to prefer that

this should be the case. How fluctuating this concept becomes in the case of many is shown, for example, by Crepieux-Jamin (loc. cit., page 65, German edition), who occasionally speaks of partial similarities -- one might call them coincidences. Can similarity be regarded as a basic criterion for identification, i. e., for the basic concept of comparative graphology? That such does not suffice herefor can at once be seen if we observe similarity together with its opposing concept -- unsimilarity. For it is obviously not a question of two sharp concepts, which comport as contrary opposites, e. g., right and left, true and false. No one can say where similarity ceases and unsimilarity begins, and vice versa; rather, the two concepts fuse unperceptibly, and it is impossible to determine exactly where this occurs. Herefrom it arises that the decision as to whether two things, i. e., here, two writings, are similar or not, remains for the subjective estimation of the reviewer -- and just this can be made use of the least as a standard for the comparison of handwriting. Rather, we must here -- if no absolute standard is available to us -- at least have an objectively somewhat more secure crutch which excludes mere subjective opinion. If one holds that similarity is an approximate conception, that a thing is the more similar, the more it approaches sameness, and vice versa, this is of course justified and perhaps excludes pure arbitrariness on the part of the reviewer. But herewith we advance not a step further in the case of doubtful and nonextreme cases, for which we are in especial need of a certain standard.

Hereby it remains that the identification of handwriting would be deprived of solid ground if we were to base it on the criterion of similarity. (Cf. also Langenbruch, Ztschr. f. Menschenkunde, Vol 3, page 390 f., who likewise comes to the conclusion that

the concept of similarity cannot be sharply defined.) Therewith of course we do not say that we also could not use this expression, above all in doubtless cases; we could use it, for example, as a comprehensive concept, or in the comparison of common writing phenomena, but not of fixed characteristics, as, for example, of the "similarities of movement" of which Klages speaks, but in individual concurrences only if in individual cases it is quite concretely indicated which type these are from which we conclude such similarity. Thus, we do not require this concept, as that of sameness, to permit the identification of handwriting to decline. We must always have a clear perception that in regard to this concept it is a question of a concept -- blunt by its very nature -- which cannot be precisely defined scientifically. Thus, we can employ this concept not as a basic one, but at best only as an auxiliary concept in comparative graphology. Later, in the discussion of the concept of characteristics, we shall see how pernicious such blunt concepts are in our field, as they are in every science. Operations conducted with the vague expression of similarity have already induced many an erroneous opinion. If one expert considers a form similar, while another considers it unsimilar, there can be as little dispute over doubtful cases as there can be over taste, because it is not a question of a solid objective criterion which can be independent of the opinion of the reviewer.

As we have already more often than not indicated, as will become ever clearer in the course of our investigation, in the comparison of handwriting it is not merely a question of the comparison of outward similarities or unsimilarities of script, in particular of script forms or of mere letter forms. That the forensic identification of handwriting cannot be exhausted therein

will now have become elucidated in that it has become evident what blunt, fluctuating, and relative concepts the expressions similarity and unsimilarity denote -- concepts by which every expert ultimately can again understand something else. Of course the comparer of scripts will compare something other than mere similarities. He will -- and this cannot often enough be emphasized -- ascertain whether or not several writings have been written by the same person. But he can do this only by making an attempt to penetrate to the living personality which, so to speak, has written the script in question and stands in the background of the factual script and the script subject to identification. Nevertheless, he can only be successful in this by detecting the expressive phenomenon and physiologically-conditioned peculiarities of the creator or creators of the script, and the way in which such are manifest. Thus, that which the identification of handwriting seeks in the script to be investigated is not -- at least not principally -- the forms which have fused in the writing picture and which are, so to speak, dead and rigid forms, but rather the psychical and physical nature of the writer or writers as it appears in the total impression of the script, in the movement strokes, the manner of filling in spaces, the peculiarity of the definition of form, and in all the individual characteristics of the manuscript.

Thus, it does not depend on an outward, quite ambiguously conceivable similarity, which can neither be fully penetrated nor accurately defined; rather it depends on whether solid clues -- let us say, signs -- with respect to the individual and unmistakable nature of the writing personality or person are to be found in the script, i. e., it depends on solid characteristics in the sense of

those to be discussed in the next section. The detection of the foregoing -- not of vague similarity -- makes it possible for us to draw definitive conclusions on the personal identity of perpetrator and suspect. If the agreement of such psychologically- and physiologically-conditioned signs is indicative enough, we can then draw conclusions on the identity of the writer.

2. The Concept of Handwriting Characteristics; Interpretable and Identification Characteristics

All those who previously have seriously concerned themselves with the basic principles of the identification of handwriting have also been concerned with the gradation of handwriting characteristics. They have approached the question as to which characteristics are the easiest and which the most difficult to produce, suppress, or alter; which characteristics appear oftenest individually or in combination; which alterations of characteristics are encountered in the majority of cases of falsification; etc. In accordance with these viewpoints, they have drawn up an entire succession of degrees, i. e., a gradation, so to speak, of characteristics. Nevertheless, it has occurred to none of them to ask what is actually meant by a characteristic in the sense of the identification of handwriting; whether the common concept of characteristics of comparative graphology could simply be employed here; whether the latter is sufficient; and the like. It is downright astounding that with respect to these questions no one up to now has properly treated them, for after all these questions are quite basic for the practice of the forensic identification of handwriting. Just as I cannot undertake successfully the simplest measurement without a suitable and established standard, as little can I judge without such whether a factual script and a suspected script were written by the same hand.

Therefore, we should like to proceed further from the question as to what is actually meant by a characteristic in the usual sense of graphology.

Virtually from times immemorial, thereby has been understood certain peculiarities of a script which permit drawing conclusions therefrom on the nature of the character of the writer. Formerly, conclusions were drawn directly from the characteristics on certain peculiarities of character; today such characteristics are regarded more as indications of general basic structures or basic attitudes of the personality, from which individual peculiarities must first be deduced. The significance of this concept has thus often changed in the history of graphology. Michon, the founder of modern graphology, recognizes only "signes," i. e., signs, with their types and nuances (Methode pratique de graphologie). Thereunder he understands a series of those phenomena which even today are designated characteristics. His successor, Crepieux-Jamin (Traite pratique de graphologie and, later, "L'écriture et le caractere"), the leader of the older French school, defines "signe" in his older writings simply as a "manifestation graphique," i. e., as a phenomenon in handwriting, then draws up an entire list of such general and specific signs for characteristics. In his later works he designates those phenomena, which correspond to the general concept of characteristics, as "especes" of signes, i. e., as specific types of graphical manifestations which he brings into a subtilized system, and from which he finally advances a very great number which he divides into seven main groups, genres. Modern graphology has justifiably deviated from this pedantic enumeration of characteristics. In this respect Heiss says: "There is no stroke and no individual sign in handwriting

which is without significance; however, inversely, every stroke and every individual sign receives its exact significance from the entire writing picture" (loc. cit., page 34). However, in spite of this, even the most modern interpretation of handwriting cannot dispense with the concept of characteristic in a sense similar to that of older interpretation, and so even today protocols and tables of characteristics play a great role. Nevertheless, even here, a bona fide definition of characteristic is of course nowhere to be found; characteristics are invariably merely enumerated and represented in their interrelationship with others. However, all analytical graphologists agree that a characteristic is a phenomenon in handwriting which expresses something, viz., something of the nature of the character of the writer.

That this definition does not suffice for the forensic identification of handwriting is obvious, since here of course the character of a writer is not to be investigated, but rather the identity or diversity of the creator or creators of several writings is to be determined. Thus, to be defined, this concept requires a modification, and, to be sure, from a two-fold point of view.

1. The practice of pointing out and enumerating individual characteristics -- a practice which was exaggerated in the older graphology, but still today has not yet been overcome and may perhaps never be overcome, for the very reason that the abundance of specific characteristics must be brought into a certain order -- has led to a great nuisance which often results in errors in the art of interpretation, but which has quite devastating effects in the identification of handwriting. For example, it is often thought that with certain characteristics, e. g., a form of connectedness,

an arch, a "festoon," the thin line, breadth, speed, and the like, one has a fixed quantity before him, which by no means is the case. These characteristics have -- and this applies to the majority of them -- such broad free play that they represent more a group of mere individual characteristics than a group of individual concrete characteristics which often embody several quite diverse types. Thus, it depends completely on which of the differentiable individual forms is meant in the individual case. If now the factual script and the script subject to identification are to be investigated on the basis of such an extensive concept of characteristic, then the comparison will be carried out with a quite blunt standard which in no case can lead to an exact and certain judgment. This lack of concretization then leads -- even in the case of the forensic identification of handwriting -- again and again to the most serious erroneous conclusions. This is illustrated by an example which we have often encountered in the practice. A very animated form of connection is the so-called "festoon," i. e., many writers connect letters -- more precisely, basic strokes -- with an indented curve which trends downward toward the line (cf. Figure IV [of original], especially the lower line). Again and again to be found in identification opinions is the observation that the "festoon" is to be found as a form of connection in the factual script, as well as in the script subject to identification. This is then considered a token of considerable accord between the two writings. In actuality, this observation -- at least with respect to its indefiniteness -- signifies, so to speak, nothing at all. Actually there is such an abundance of diverse types of festoons, e. g., deep and shallow, tight and loose, drawn-out and contracted, those manifesting long and those manifesting abrupt ending strokes, to name a few, that the above-mentioned establishment of an accord contains no definite

assertion which can be employed in the identification of handwriting. However, inversely, the determination of a quite specific type of festoon which is especially characteristic of the writer in the factual script, as well as in the script subject to identification, could be, under certain circumstances, quite decisive for the establishment of the identity of the creator of both writings. Herefrom it arises that in the comparison of handwriting, characteristics must be strictly concretized, for also in the case of almost all the other characteristics which function as standards in graphology, this same phenomenon of indefiniteness is to be found. Thus these latter characteristics could also be advanced as examples. In this sense -- of course in this sense only -- the identification of handwriting is actually a kind of "astrology," inasmuch as its characteristics cannot be specific and concrete enough.

2. Thus, if, on the one hand, the concept of characteristic requires a reduction, on the other it requires an enlargement.

In the case of character-analyzing graphology it is a question of expressive phenomena: this is the science of the expressive content of the personal execution of writing. Thus, a characteristic is a phenomenon which expresses something, viz., a peculiarity of character, of the personal mental life, of personality, or the attitude of the latter to its environment. For the most part it has been graphologically-trained handwriting experts who have often carried over into the identification of handwriting this concept of the characteristic as a sign of peculiarities of the character, without considering that here it is not only a question of expressive phenomena in the characterological sense. In the forensic identification of handwriting not only, and not above all, are the mental

life or the structure of the character of the person subjected to comparison in the writing to be investigated, but rather his naked identity, i. e., the question as to whether or not one deals with one and the same person. However, the person is to be recognized not only in the expressive phenomena of his mental life, but rather in all that which in any way can bring him to light as an individual entity, in all that which not only is characteristic of his personality in the psychical sense, but also of his person in the physical sense. However, phenomena of both kinds are to be found in handwriting. Such which are the phenomena of the mental life of the writer, and such which can be traced to the biological, physical, and physiological being of the creator of the script, such which Pophal in particular has taught us to look for in handwriting. Certainly these are also expressive phenomena in a broader sense, but not such which have anything to do with the character of the person and which could be interpretable herefor.

In any case, with respect to comparative graphology, all phenomena in handwriting are of importance, and are suitable and necessary for comparison. It arises, then, that it is a question of matters of a purely circumstantially-conditioned nature, as perhaps a scratching or an exceptional slipping of the pen, or strokes outwardly caused by the effects of, for example, a start due to a sudden noise or the like. (Crepieux-Jamin calls this latter phenomenon "signe accidentel" and justifiably excludes it from real characteristics.) Characterology and analytical graphology, as well, have labored the problem of what is to be understood by character; comparative graphology has been relieved of this question. Of importance for the latter science is that which is the expression of the movement of a person, insofar as it is recognizable in handwriting.

It is of no moment for this science whether or not the specific manner of movement, manifest as an individual form in the script, expresses something of character, i. e., any kind of arrangement, tendencies, motives, or attitudes with respect to environment. One must differentiate between purely biological functions or actions of the person as an expression of his physical life, and those expressing his mental life. The latter, so to speak, are embedded on the former and are borne by them, speaking from the viewpoint of the so-called "theory of strata" (Erich Rothacker, "The Strata of the Personality"), but "the manner of movement, characteristic of a person, is nevertheless not always expressive of his character. The primary starting point for reaching character lies outside corporeality" (H. Wollnik, "Basic Problems of Graphology," 1933). However, for the comparer, the phenomena of this purely biological life in handwriting are of equal value -- often even greater -- to character-expressive phenomena, which alone actually interests analytical graphology which at best still concerns itself with the latter, inasmuch as through them impulsion and inhibition and vitality are manifest ~~altogether~~.

Thus, in the identification of handwriting the tenet that no stroke and no individual sign is without significance in handwriting is accorded full value. For every stroke and every individual sign can serve as indication of the identity or diversity of persons, even though, according to the present-day stand of the art of interpretation, we cannot directly associate them with characteristics. It will be manifest in the course of the present investigation that, in accordance with experience, the signs in handwriting which, as such, are not directly utilizable for the usual interpretation processes, and which are thus not expressive

phenomena in the strict sense, possess a particularly great indicative power as characteristics for comparison, and represent, in the highest sense, "characteristics" for these processes. For the present, a few examples of such comparative characteristics will here be advanced. To be mentioned, for example, are small commencing hooks, or light uncertainties of direction, or unsteadiness, which by far need not invariably indicate the presence of diseases, or the placing of individual strokes of letters below the line, or specific types of commencing strokes of capital letters, or, finally, rudiments of letters, e. g., half-strokes occurring in incomplete forms, and the like. Such handwriting peculiarities can be quite decisive for identification. Or the following might also be mentioned here. Those phenomena in handwriting which cannot be regarded as independent characteristics in the sense of the art of interpretation but rather only, so to speak, as appendages of independent handwriting characteristics, which are only interpretable in the presence of these latter.

Thus, for example, back-stroke hooks in cancellations, or the anticipation of upper signs, can permit drawing conclusions on the speed of execution of handwriting. Such handwriting characteristics, as such, are not independent interpretable characteristics, but are nonetheless independent comparative characteristics, for the most part of the greatest indicative value. We shall later discuss all this detailedly in the treatment of individual writing pictures, and above all of movement strokes.

The researches of Pophal have shown us how important and how fruitful it is to observe handwriting not only from the psychological standpoint, but also from the physiological. It is just this type

of observation which indicates an entire series of characteristics which are of the greatest significance for the person of the writer in question -- above all in a purely biological sense -- and morphologically for the appearance of the handwriting. For also reflected in handwriting is his physical make-up, not only his psychical, and indeed the former, not only the latter, is decisive for the question of the personal identity of perpetrator and suspect. Therefore, the characteristics of the more corporeal life, not only of the psyche or the character, are explicated.

Moreover, for comparison for the purpose of identification, it is for the most part virtually of no importance whether the underlying cause of a comparative characteristic can invariably be precisely determined in individual cases; whether the cause is psychological, physiological, or both simultaneously. The latter, for example, not infrequently can be the case in the occurrence of fading in the script; indeed this can be traced to physical fatigue or to unstableness of character or both, e. g., faux pas of movement, stroke uncertainties or disturbances, or the like. It makes no difference what their deeper-lying causes are. In any case, each occurrence of such type in handwriting must be utilized for comparison. Hereby, it should once again be emphasized that those characteristics which are conditioned only physiologically -- because they lie under the threshold of the consciousness of the writer and are as a rule entirely withdrawn from his discretion -- represent particularly important comparative characteristics.

3. The Gradation of Handwriting Characteristics

It will already have become sufficiently clear to those who have attentively followed our previous arguments that all handwriting

characteristics are by far not of equal value. Thus, we have seen in the treatment of the school copy and its significance that characteristics traceable to the latter are to be found in many handscripts. In the development of ones handwriting, the more the individuality of a person is interfused with the school copy, the more characteristic of him must be the now-appearing characteristics. Such characteristics are ultimately to be found only in the case of such a person or one similarly inclined or of a similar nature, while in turn the peculiarities assumed by him from other scripts will be less singular.

Thus, then, the first thing that every comparer of handwriting learns through pure empiricism is the experience that the concurrence or nonconcurrence of certain characteristics is virtually of no significance for the question of the personal identity of the creator of the factual script and the script subject to identification, whereas the agreement or nonagreement of other characteristics can be quite decisive for identification. Thus, he will next distinguish the "frequently-appearing" from the "seldom-appearing." He will compare the "incidental" with the "characteristic." The experiences of the forensic practice show that many -- unfortunately, very many -- handwriting experts never really get over these more or less primitive differentiations. As will shortly be demonstrated, all these concepts are too vague. In the sense of the practice, one of them is employed quite falsely, viz., that of the incidental characteristic, as is shown by the following. A characteristic can only be designated incidental if it has nothing at all to do with the production of handwriting, as such, and above all with the peculiarity of the writer, i. e., those aspects mentioned in the previous section which originate only from the nature of the writing material or from outer influences,

and which are also called "signes accidentels" by French graphologists, i. e., "incidental characteristics," as expressed in German. These are the only handwriting characteristics which are completely valueless for comparison. In one way or another, every other characteristic finds its basis in the psychological or physiological make-up of the writer, even though we are perhaps unable to point out the exact reason in each individual case. However, in comparison one must always attempt to form a clear perception as to how each individual handwriting characteristic has originated and how it has been conditioned, e. g., by primordial writing impulses, certain movement or formation tendencies, by borrowing from the handwriting of others, be it the result of a certain choice-relationship or for the attainment of a certain impression, or only by a specific type of functioning of the muscles used in writing, or by falsification. At the same time, the extent of greater connection they have with other handwriting characteristics must be investigated. Only then is deeper penetration into the specific "life" of the script under investigation possible.

If the most primitive comparison practice is unable to manage without a certain gradation of handwriting characteristics, the underlying reason is to be found in the very nature of the matter. In the arts -- and graphology also belongs in this field -- nothing, as has already been mentioned, is counted, measured, weighed, or otherwise evaluated in a mechanical manner. For here it is indeed a question of the fathoming of living personalities -- be it only of their character, be it of their entire person -- which can never be sounded with mechanical standards, but rather only through the observation of their vital expressions. Therefore, all importance is

accorded this question: which of the expressive phenomena of the personality or of the individual in handwriting are able to render better, more exact, and more definite indication than the others with respect to their unmistakable peculiarity?

Accordingly, it is no wonder that analytical, as well as comparative, graphology evaluates in quite diverse manner the characteristics found by them in handwriting. With respect to the art of interpretation, it might be pointed out only briefly that in this art a great role is played by dominants, i. e., those characteristics which give handwriting its particular stamp and dominate it, as is implied by the term. However, more important to this art are those characteristics which indicate a basic structure of the character, e. g., those expressive of only a certain attitude or focusing in relation to environment, those manifesting a certain formative impulse or will. Hence the preference shown to the movement picture, as opposed to the space or form picture, in present-day graphology.

In any case, in the final analysis, the gradation -- or, more exactly, the diverse evaluation -- of handwriting characteristics signifies a basic problem for the identification of handwriting, for it is decisively dependent on the answering of this question how the results of a concrete comparison and its individual findings are to be judged.

In accordance with all the foregoing, it is quite conceivable that all previous investigations and publications in regard to our theme have been almost exclusively -- too exclusively, in our opinion -- concerned with the gradation of characteristics. Doubtless the bases herefor are the statements of Georg Meyer (see Note 1 below) and Ludwig Klages (see Note 2).

((Note 1] Graphologische Monatshefte, 1900: "The Forensic Identification of Handwriting"; "Scientific Graphology," third edition published by Schneickert, 1925.)

((Note 2] "The Problems of Graphology." Excursus on Handwriting Expertise. "Handwriting and Character" in the chapter on acquired handwriting.)

Trail-blazing for the identification of handwriting have been the researches of Georg Meyer, who has carried out investigations with great care and with an excellent method of proceeding. Investigating the handwriting characteristic principally in relation to the difficulty entailed in its artificial creation, he thereby came by and large to the following conclusion. Alteration of one's own handwriting is the easier, the more unified the principle by which it is effected, e. g., the increase or decrease of the motor impulse which is above all manifest in size, pressure, and speed. A merely partial increase or inhibition of the impulse is more difficult. Further, it depends greatly on the location of that part of the writing in which the alteration is to be executed. Thus, the following are difficult to alter: small letters, upstrokes, ascending letters connected on both sides, because these are written more automatically, since they distract the attention of the writer to a greater degree than do majuscules or downstrokes, for example. In accordance with these viewpoints, Georg Meyer drew up a gradation. He investigated principally only falsifications executed by means of the disguise of handwriting. He treated falsifications executed by means of copying only briefly in the discussion of the difficulties of forging. These we shall later discuss in detail.

Klages bases his conclusions on these investigations of Meyer. Klages has further developed and deepened them, and therefrom he has formulated three -- what he calls -- basic laws with which we shall concern ourselves in the next section. He carried out investigations as to which characteristics the attention of the forger is most often directed. With respect to the difficulties of production, he drew up a detailed gradation which will be given here, since all his followers have concerned themselves and have related their investigations therewith. We shall also return to it later. The line-up goes from easy to difficult creatability in the following sequence: pressure, slowness, smallness, size, speed, evidence of little exertion of pressure, steepness, lack of svelteness, articulation, regularity, descending letters larger than ascending letters, narrowness, unconnectedness, slant, width, large lower parts of letters, connectedness, connectedness of curves, upper parts of letters larger than lower parts, "arcades," "festoons," thin lines, small lower parts of letters, inarticulation, unregularity, svelteness. Moreover, Klages pointed out the importance of two characteristics of the movement picture, the inconsistencies of movement, and complex similarities (see Note below). We shall discuss the first in the treatment of the process of the writing movement, the second in the treatment of the correspondence of several characteristics.

([Note] "Problems of Graphology," page 190 f.: "Excursus on Handwriting Expertise," published later in "Psychological Expedients of the Identification of Handwriting," Ztschr. f. Menschenkunde, Vol 2, No 3.)

The followers of Meyer and Klages, above all Saudek, Schneickert, B. Mueller, and Wittlich (see Note following), have attempted to develop further the investigations of their predecessors and have extended the processes of the latter into further methods of proceeding and fields. This has led to quite diverse results. In the fields treated by Meyer and Klages the endeavors of these followers in our opinion have not in any way advanced further. Therefore, we shall not treat of them in detail here. All these followers have likewise drawn up gradations. Mueller, Schneickert, and Wittlich undertook this even in the examination of the question of the frequent or seldom occurrence of general or specific handwriting characteristics. To a great extent, Wittlich experimentally investigated the simultaneous occurrence of diverse characteristics in one and the same handscript. He also investigated the frequency of various types of falsification. We shall come back to all the foregoing in the critique of their methods.

([Note] Saudek, "Experimental Graphology"; Schneickert, above all in "The Comparison of Handwriting and Its Graphometrical Verification," Ztschr. f. ger. Med. [Journal of Forensic Medicine], Vol 105, and Arch. f. Krim. [Archives of Criminology], Vol 104, page 150 f.; Wittlich, "Applied Graphology," second edition, page 158 f.)

We shall reserve for later the investigation and discussion of the following questions: (1) the extent to which the previously-encountered results can be regarded proper in accordance with the experiences of the forensic practice, and, in particular, the extent to which they can be regarded as valid in general, and (2) how and the extent to which they can be employed in the forensic identification of handwriting.

On the other hand, with respect to the theme of the gradation of handwriting characteristics, it seems fitting here to make a summary, treating of those characteristics which appear particularly indicative to us ourselves in accordance with the experiences of the forensic practice, and in relation to the previous results of our investigations. At the same time, it appears proper to establish whence this particular indicativeness accrues.

However, we do not consider it fitting thereby to draw up gradations in the manner which has previously been customary, or to touch upon any strict gradation at all. To draw up a gradation among these particularly important handwriting characteristics would only be determinative generally, and not for each individual characteristic.

As such "comparable characteristics" in the strictest sense, we regard the following.

1. All those which are indicative of the whole of the writer's personality, or of the latter's inborn tendencies and impulses, i. e., of the deeper strata of the personality. In addition to the vital form of a manuscript and its rhythms, which are indicative of the primordial interplay of impulse and inhibition, such expressive phenomena in handwriting are pressure and the distribution of pressure, which reflect above all the psychical elasticity and its employment, and, finally, those characteristics of the movement picture of handwriting which are expressive of the course of psychic occurrences. Each of the foregoing will be treated in detail later. Also belonging to these characteristics are those which originate from deeply ingrained habits -- not from primordial writing impulses. These are the so-called appropriate

acquisitions, which have found their way into the manuscript by way of addition but which have organically interfused with the remainder of the manuscript as writing phenomena which are in concordance with the essence of the writer; and, further, such characteristics as, for example, those of personal signatures which occur over and over again and have thus become quite fixed in accordance with habit.

Less indicative are those handwriting characteristics which reflect only habitual attitudes or attitudes toward the environment (see Note following); in this respect -- and only in this respect -- those characteristics of the writing picture which are particularly expressive of these attitudes recede behind those of the movement picture. ([Note] In this case the danger of circumstantially-conditioned characteristics will often be greater than in the case of characteristics of vital form or of rhythm.) Likewise less important are all those handwriting characteristics -- other than those mentioned above -- which are based upon only subsequent habit. Even though in the meantime they may have become more or less mechanical, these characteristics, which for the most part are assumed consciously or willfully, can nevertheless be more easily suppressed or altered than can others. As cannot often enough be emphasized, the least indicative are those characteristics which could have originated from a common school copy. Therefore, of less importance to us are those letter forms which invariably assimilate to a greater degree, as a whole, the school copy than other comparable forms which approach to a greater degree movement strokes.

2. Belonging to ~~these~~ characteristics which originate from the deepest strata are those which are principally explicable from

a physiological-movement standpoint and which we have discussed in detail in the treatment of the concept of characteristic. In general, those which are perhaps no longer characterologically interpretable but which simply can still be pointed out. As has already been mentioned, it is here a question of, for example, disturbances of strokes, small commencing or recommencing hooks or dots; details of the stroke picture and above all of the condition of margins or the distribution of stroke pressure; fatigue phenomena in the script; and the like. We shall discuss them more detailedly in the treatment of the writing picture.

3. Finally, there are also handwriting characteristics which, as such, need not be of particular indicative value for the identification of the creator of a manuscript. Such an indicative value arises through the place where these characteristics are to be found, or through the specific manner in which they relate to the remaining handwriting picture. Hereby, it is a question of specific combinations of handwriting characteristics which are to be found in certain letters or letter groups, or, as mentioned, in a signature. Finally, of those which, without being falsification characteristics, become distinguishable to a certain degree from the remaining script due to their singularity. Combinations will be treated in detail later. With respect to the third type, which Klages calls inconsistencies, it is a question of, for example, phenomena such as fine dots over "i's" in heavily-impressed scripts, flourishes or rounded forms in otherwise stiff or angular writing, and the like. We shall also have to discuss this in more detail later. Finally, we might also mention here the so-called variants, e. g., letters which occur in handwriting in diverse forms and only in such.

Herewith, in the main and in accordance with our views, should be mentioned those characteristics which oftenest and most certainly express in the script the individuality of a person with respect to his unmistakable peculiarity, and, with that, those which are most decisive in deciding the personal identity of the creator of several scripts.

However, from this exposition it should not be inferred that these handwriting characteristics alone are to be employed in the process of comparison.

We explicitly desist from a separation of characteristics into those which are important for comparison processes, and those which are insignificant herefor, as Schneickert, for example, with his "primary" and "secondary" characteristics, has attempted. For quite in conformity with a concrete case, an otherwise less important handwriting characteristic can be of significance -- especially in its relationship to others -- and can be quite decisive for the ultimate judgment.

V. Principles and Methods of the Forensic Identification of Handwriting

1. Basic Laws and Principles

Up to now, what has been the state of the intellectual penetration of the problem of the forensic identification of handwriting? Actually, such has been undertaken by Ludwig Klages, alone. It was he alone who made the attempt to consolidate psychologically this science, and he finally condensed it into three "basic laws." It is astounding and in any case remarkable that as early as 1910 he had recognized and denoted the most essential problems of the identification

of handwriting in an excursus on handwriting expertise in his Probleme der Graphologie [Problems of Graphology]. Unfortunately, this was of course effected for the most part in more or less random remarks -- "in passing," as he expressed it. Here, among others, he pointed out the great importance of the material demanded by the two preliminary questions: whether a disguise is at all in evidence, and whether the suspect be capable of the disguise in question. He emphasized the importance of reversions and the diverse identification value of characteristics; pointed out similarities of movement, complexities and inconsistencies of movement; then briefly developed his basic laws. It can be regarded the destiny of the identification of handwriting that Klages was hindered, due to other tasks, from developing these indications, which already were suggestive of a theory of the identification of handwriting, into such a theory. The following summarizes the three basic laws which he detailedly set forth in his later work Handschrift und Charakter [Handwriting and Character].

1. The law of the direction of attention. He who feels induced to remodel his own handwriting is willfully capable of altering only those peculiarities which appear to him himself as requiring alteration. The psychological basis for this law is approximated by the following. Whereas repetition and uniformity render a conscious thing "habitual" and finally unconscious; inversely, each alteration tends to draw this conscious thing into the apperceptive sphere. This applies to all automatic movements. Of necessity, the latter must the more become conscious movements in accordance with the degree to which they experience disturbances of their continuity.

Klages speaks further of a law of the periodic fluctuation of attention and concludes from this that "reversions" appear oftener at the end than at the beginning of a word. He emphasizes that the attention is directed more toward large, long, and medium letters, than toward small letters, as well as toward spacing, tempo, stress, and downstrokes.

2. The second basic law formulated by Klages is that of the difficulties of alteration, or, as he later called it, the constancy of writing characteristics. Thus, a handwriting peculiarity is the more difficultly suppressed, the more it is a part of the expression of the will. The following approximates the explanation given by Klages. An attempt to disguise is doubtless an activity of the will. The will, which releases impulses, is in relation to the amount of the force which can be summoned for the production in question. Most easily, the will will attain a modification quite in conformity with the extent of this force, i. e., an absolute alteration of size, etc., but not of rhythm or proportion. Thus, a handwriting peculiarity is the more difficultly produced the less expressive it is of the will. Since the will belongs to the inhibited impulses, above all inhibitory characteristics will be produced in the arbitrary disguise of handwriting. Then, as expressed by Klages, "the arbitrariness of those expressions which occur through modifications must of necessity be more easily effected than that of those which occur through the unfettering of natural impulses."

3. The third basic law treats of unintentional attendant alterations. Every intentional alteration of a manuscript is accompanied by certain unintentional incidental effects which attest

increased effort, e. g., in particular, arrangement of the total impression, accumulation of interruptions, and increase of pressure. Thus, the following tend to increase unintentionally: regularity, narrowness, pressure, unconnectedness.

These three basic laws are and remain the actual keystones of the science of the identification of handwriting.

In spite of this, we must take exception to their being designated "laws," because they are not unexceptionally applicable. Klages himself has not overlooked this, for he occasionally speaks of the fact that the formative will "tends" to touch upon subsequent strokes, i. e., it "tends" to increase, etc.

However, it is above all our view that these laws drawn up by Klages are in need of supplementation or elucidation of literal rendering.

(a) With respect to the law of attention, we have already undertaken this supplementation in the psychology of the forger through the ascertainment that in the case of many writers this concentration does not abate toward the end, but rather sharpens in the course of writing, when the writer gets off the ground, so to speak.

(b) The second basic law would require a supplementation or rather an elucidation through a different literal rendering in the following direction.

Klages says that a handwriting peculiarity is the more difficultly suppressed, the more it is the expression of the will. Here, in our opinion, one should not speak of a "will" in general,

but rather, as we have done in the foregoing, one should differentiate between unconsciously primordial movement impulses and consciously controlled movement strokes, as well as between the manifestations of both. The former are in the long run more difficultly suppressed and their characteristics are more difficultly produced or copied than those which are consciously controlled and their characteristics. With such a differentiation the misunderstanding is avoided whereby, with respect to the literal rendering of Klages, it could appear as if consciously controlled writing movements, which, according to him, lead to "manufactured" writing strokes, are more difficultly suppressed than primordial impulses and their characteristics. Klages could not have meant this, since this would contradict the tenet drawn up by himself, i. e., of the relative constancy of individual rhythm. As far as we are concerned, it is thus solely a question of explicitly elucidating and stressing the fact that willfully-controlled writing movements and, with that, "manufactured" characteristics, are at least easier suppressed than are primordial writing impulses and their expression in the manuscript, if they are inseparably bound with such or are so deeply ingrained in habit that they have already become second nature to the writer.

(c) As in the case of the first and second basic laws of Klages, the third, the content of which has already been pointed out by Georg Meyer, is also in need of supplementation -- and to quite an extent. However, it has already found this supplementation through the basic principles, drawn up in the meanwhile by Popphal, with respect to the consequences of the stronger stiffening of a manuscript which is artificially produced. Hereby, the too-narrow confines of handwriting phenomena previously assumed to be attendant alterations find their required broadening.

As we have represented in a certain section above, those unconscious and unintentional incidental effects which can be traced to the artificiality of a creation of handwriting are of a much more extensive type than was originally thought or as found by Meyer and formulated by Klages -- at least in the individual exemplification of the latter's law. Thus, now above all it must be explicitly stressed that not only must the incidental effects of the direct handwriting alterations produced through the conscious formative and descriptive will of the forger be taken into consideration in the process of comparison, but also those which have arisen solely through the fact that the forger has "drawn himself together" in the disguise or copying, thereby assuming an unnatural and unsuitable attitude and thus inducing a different functioning of the muscles called into play in writing, as has been represented above. Not only can this process have produced individual alterations in the script, under certain circumstances it can lead to a quite altered appearance in its totality which is physiologically explicable.

Herewith, we have already gone into individual inferences and particularizations, and in regard to these individual statements a critique is quite unavoidable -- a critique which does not touch upon the basic laws, as such. Many of these statements are not in conformity with the experiences of the forensic practice. In our opinion, the reason therefor is the fact that neither Klages, nor Meyer, nor their followers have employed forensic material -- a fact which we consider a serious methodological shortcoming and which we shall later establish in more detail. The extent to which our views are individually in divergence will be manifest in the later expositions. Only two examples will be advanced here. For

example, we do not consider it correct that the forger gives particular attention to tempo. As we shall later see in more detail, tempo is slowed, as a rule, in one way or another in every artificial creation of handscript. Further, in accordance with experience, many falsifications are executed in such manner that angular connectedness is chosen in the disguised handscript. According to Klages, this appears quite conceivable, for angular connectedness is the type which most conforms to the will which the forger must apply in the disguise of handwriting. However, this finds contradiction in the fact that in his table of creative difficulties angular connectedness appears under the difficultly created handwriting characteristics. In accordance with our experience, we do not believe that "festoons" are particularly difficult to render. Here also, it must be again and again emphasized that it depends in large extent upon individual differences. Thus, anyone who employs an angular-like connectedness, e. g., an angular "arcade," will more easily produce angles in the disguise than will the writer who employs a soft festoon. From our point of view, it will always be precarious and insecure to put forward such detailed gradations as being in general binding, since Georg Meyer, for example, has explicitly emphasized that he regards his assertion as being in no way definitive or infallible.

Moreover, the "basic laws" actually relate only to the disguise of handwriting, and not to the copying of handwriting.

It appears necessary to us to draw up some basic principles for the identification of handwriting from all these bases. Such should employ, perfect, and supplement the basic principles drawn

up by Klages and the suggestions made by him. However, they should specifically and unmistakably contain all possible fundamentals for the identification of handwriting -- not only those valid for the disguise of handwriting, but also those that are basic for cases of copying or falsification. These are derived from the experiences of the forensic practice and from that which previously has been learned with respect to basic principles in the course of our investigation. At the same time, they should serve as the basis of an irreproachable and successful method of the comparison of handwriting -- a method which our forensic practice is sorely in need of.

Their literal rendering would be approximated by the following:

1. No handwriting falsifier, to the extent that he actually writes and does not merely draw, is capable of thoroughly suppressing or altering his inborn writing impulses and his ingrained writing habits. In the case of every falsification, the foregoing will in some place or in some manner break through their barrier, and will be almost invariably recognizable. Those places in the forged script in which the foregoing occur and are evident are then decisive for comparison processes.

2. In the comparison of handwriting it is not a question of outer similarities of script forms, but rather of the concord or diversity of quite specific handwriting characteristics which have come into being through physiological or psychological causes. These must be concretized most exactly, and not only should the more usual -- from the viewpoint of analytical graphology -- handwriting characteristics be compared, but also all phenomena in the script which may possibly indicate the person of the writer.

3. The comparison of handwriting does not consist of the comparison of letters, as such, but of the comparison of all phenomena of the individuality of the writer in the manuscript in question, as they are manifested in the total impression, in the rhythm, in the stroke picture, in the movement picture, in the form picture, in their totality and in the finest detail. Thereby, to be considered falsification characteristics, and in comparison processes to be ascertained as not belonging to the natural handwriting of the forger, are not only those individual strokes produced consciously by the forger in falsification, but also the unintentionally-arising phenomena of stronger stiffening as indirect results of the activity of the forger.

4. The handwriting forger alters those constituents of his manuscript to which he gives his attention, i. e., above all, letter forms and downstrokes. Least of all, secondary constituents of letters and their upstrokes, as well as other handwriting signs. As a rule, falsification occurs in the sense of a tenseness and inhibition, rather than in the sense of a relaxed condition. Moreover, the handwriting falsifier finds it the more difficult to suppress or to alter the characteristics of his own handwriting or to properly copy those of a foreign manuscript, the deeper the strata of the person from which these characteristics are derived. The forger finds it easier to execute complete alterations of comprehensive characteristics, such as size and breadth, than an alteration of proportions.

5. Thus, the conformity or nonconformity of handwriting characteristics is to be accorded a higher value, the deeper the strata of the person, or the stronger-ingrained the writing habits

from which these characteristics derive. Also important are particularly those which are to be found incorporated in variants or in individual letters or letter groups, or those which are inconsistent in a specific manner with the other characteristics of the manuscript. To be accorded the least value are those characteristics which could be traced to a common school copy or to some other writing copy.

Since the afore-going basic principles have been derived from the results of our work, it will not be necessary to develop them in detail once again or to exemplify more detailedly. Rather, it will suffice to add a few references for a better understanding.

Since we have endeavored to instill in them every possible fundamental of the comparison of handwriting, it was not possible to express them more briefly. It is to be repeated that they are valid for all types of falsifications of handwriting, and not only for cases of disguises. They are so drawn up that the methods represented by us result obligatorily, so to speak, from them. The reason why we have avoided the expression basic "law" is manifest in the discussion of the basic laws of Klages.

With respect to the individual basic laws, the following might also be mentioned.

The establishment and explanation of the first can be seen in that which has been said of the psychology of the forger, of the forces of movement and formation, and of tendencies. The second basic principle finds its establishment in the statements in regard to the concept of similarity and comparable characteristics.

The third basic principle, which is connected with the second, is developed in the section on writing movement and formation, in particular with respect to the difference between comparable form and letter form. The indirect falsification influences through stronger stiffening, which are mentioned in this basic principle, are represented in the section on this theme. Contained in the fourth basic principle are above all the basic laws of Klages, of course with the supplementations which we consider necessary. Finally, the fifth basic principle draws upon the findings of the others as regards the question as to how the findings of a systematic comparison are to be individually evaluated. It finds its basis above all in the section on the gradation of characteristics. Anticipated in this basic principle are our investigations on variants of characteristics, on inconsistencies and combinations, and on the characteristics of signatures which we have included in the expression "deeply ingrained writing habits." All this can only be discussed in a connection which will occur later in the course of the present investigation.

By means of the discussion of the diverse writing pictures and individual characteristics in the practical part of this book, manifold opportunities to again touch upon these basic principles will present themselves -- opportunities to clarify them by examples and thus make possible a deeper understanding of them. In the main, they should be directive in every relationship for the practice, and above all through the superstructure of the method. We now turn to a discussion of methods. First those previously in practice, then our own.

2. Critique of Previous Methods and Representation of Our Own

We have had manifold opportunities to point out the fact that the results of previous research in the identification of handwriting are in part at variance and in many points quite contestable. The principal reason for this is that the method which has previously been in use entails several basic errors.

1. The previous process was a purely experimental one, executed by means of the examination of persons selected for experimental purposes. However, not one of those who undertook investigations in this field have made use of forensic material. The following consideration attests the fact that this is a serious methodological error. Every manuscript is the expression of a quite individual type of specific person. Thus the condition of the manuscript is decisively dependent on the personal source of this expressive phenomenon, and on the outer and inner state the writer finds himself in the process of writing. Self-evidently, this also applies to the creation of an artificial script -- perhaps to the greatest degree. Georg Meyer stressed individual differences in the case of experimental disguises of handwriting. Quite interesting in this connection are the ascertainties, made in the meanwhile, with respect to the great difference which exists between educated and uneducated persons in the manner of the creation of artificial scripts (cf. Reitgerber, Archiv fuer Kriminologie [Archives of Criminology], Vol 108, page 130 f.). Forgers -- above all, writers of anonymous scripts -- are of course to be found among both classes. It is much less a question of such social differences than it is of the following: the outer and inner state and mental attitude of the person utilized in experiment and of the real-life forger are

conceivably different. The former finds himself in the so-called state of being examined -- a state in which he is more or less coolly prepared to carry out the task assigned him for scientific purposes, viz., that of disguising his handwriting. On the other hand, the "genuine" forger often finds himself in an outer state of distress. An example herefor are the frequent falsifications of order forms executed by poor commercial agents. Almost invariably, he will be oppressed inwardly, even though unconsciously, by the fear of being discovered, or driven by greed for money, hatred, or envy. All this will influence more or less the manner of execution and the condition of his artificial manuscript. However above all the latter will depend on the type and strength of his motives and the diversity of inclination. Herefor we need only recall our observations on the psychology of the handwriting forger. A certain recognition of the type and manner of the actual execution of a forged writing can in actuality only be obtained through the observation of the criminal products of actual forgers of documents, i. e., in the atmosphere in which such falsifications really arise, and as reported by the forensic practice -- not in the vacuum of the experiment with randomly selected persons used in such experiments. (In his above-mentioned work, Binder demonstrated how much is to be derived from forensic material.)

2. However, previous methods neglected the differences which result from the psychological condition and situation of the forger in question, not only in the material by means of which such methods were carried out, but also in the establishment and substantiation of their results. Similarly to the manner in which a machine might be investigated to determine the number of revolutions executed in

a certain period of time, "the" difficulty of creation, or "the" direction of attention, or the "occurrence" or simultaneous occurrence of any type of characteristics are quite mechanically investigated in accordance with their frequent or infrequent appearance. However, here it is not a question of facts which can be comprehended statistically, but rather of such which are of diverse form each in accordance with the psychological peculiarity of the forger. Neither is it a question of invariably constant handwriting phenomena in the case of one and the same writer, as we shall see in the discussion of the alternation of characteristics. Whereas Georg Meyer, who of course based his findings on a quite insufficient number of persons selected for experimental purposes, invariably stressed individual differences, and Klages invariably derived his findings from the science of expression and general psychology, their followers again and again attain only the purely mechanical and statistical in their experiments. Nevertheless, it was a period in which mechanical direction, which was satirically called "psychology without a soul," still had a strong lingering effect in psychology. Thus, this direction in the comparison of handwriting might be called a comparison of handwriting products without consideration of the writer. Thereby, it was well that a strict method based on natural science was taken up. (See B. Mueller, Arch. f. Krim., Vol 104, page 105 f.) It was completely forgotten to what large extent the mastering of difficulties of creation, the direction of attention, and the manner of execution of the falsification of handwriting depend on the concentration capacity of the falsifier, his talent for disguise in general, his adroitness and energy, his attitudes toward the world and toward himself -- in short, on an entire series of physical and psychical inclinations,

capabilities, and peculiarities, upon which the occurrence of certain characteristics of course depends in full degree. Thus it can be said that the rarity or frequency of the latter, in the case of a certain number of persons employed for experimentation purposes, signifies only the presence or absence of corresponding characteristics or corporeal peculiarities in these persons.

3. In spite of their neglect of the psychological, these here-criticized processes on the other hand hold much too close to the views of characterological graphology. This is manifest in that in the circle of their observation they draw for the most part exclusively on the characteristics of peculiarities worked out by the older graphology, and that they neglect the physiological conditions to which characteristics can be traced, as we have already seen in the treatment of the concept of characteristic. However, even otherwise, exception can often be taken to a bluntness of this concept. If, in the explanation of the results of these experiments, simply "alteration of forms of connection" are spoken of, then it is overlooked that, for example, the transition of "festoon" into angle signifies something psychologically quite different from that of the reverse process. Likewise, all these comprehensive handwriting characteristics are usually treated as fixed quantities. If one is seriously concerned with the concretization of characteristics -- as must be the case in the identification of handwriting -- it is then an impossible undertaking to comprehend statistically the characteristics in question. We need only recall our example of the various types of "festoons"; but also in the case of many other handwriting characteristics it is quite a similar matter. Think, for example, of the possible forms of additions or disturbances of strokes.

4. Whereas Georg Meyer and Klages coped with the essential problems of the identification of handwriting with excellent constructive methods of proceeding and contributed to the solution of these problems, to be found in the case of their followers are solely experiments in regard to which even the object of the investigations appears to us at least partially little suitable. Leaving the limitation to the frequency or rarity of the occurrence of characteristics out of consideration, questions are sometimes here raised, with respect to which the answer appears to us unessential or self-evident for the comparison of handwriting. Thus, for example, the question as to whether "festoons" coincide oftener with connectedness or width, than do angles in this respect, can be solved by the simple consideration that, in accordance with its executional stroke, the former provokes connectedness-and-width, while the latter renders both difficult. It appears to us no less self-evident that strong connectedness and binding of upper signs must obligatorily result from the same movement impulse. On the other hand, the investigation of the connection of characteristics and their simultaneous occurrence in a manuscript does not appear called for in our opinion, if such characteristics have nothing to do with each other psychologically, physiologically, or from a technical point of view with respect to handwriting, e. g., certain types of connection, the manner of distribution of size in manuscript. Such experiments appear unfruitful to us.

Of course in regard to these critical observations it should not be forgotten that the statistical method has also accomplished much. Our assertion is only that no further progress can be made in this direction. Certainly it is of some value to know whether a certain characteristic in general occurs seldom or often in a

handscript. Such findings, under certain circumstances, at least provide certain clues. Nevertheless, it is impossible to construct a method for the practice on such a basis, since such a method, as we have seen, insufficiently takes into consideration psychological and physiological-movement viewpoints and the differentiable indicativeness of characteristics. The individual results of these investigations, especially those which relate to frequent and rare occurrence, all of which we of course cannot advance here (see Note 1 following), can certainly be made use of by the handwriting expert as rules of thumb and leads, so to speak for these results are quite utilizable as such (see Note 2). ([Note 1] These results are summarized by Wittlich, loc. cit., pages 159, 185 f.) ([Note 2] The Rohrschach test, for example, also uses statistics, but only as an expedient for qualitative evaluation.) Whether their application in compliance with our method is not superfluous of course appears questionable to us. How insecure the advocates of the statistical method themselves feel is attested by a casual remark of Schneickert, i. e., it will always remain a matter of the personal experience of the expert as to which characteristics he regards primary, i. e., important for the comparison process, and which he regards secondary, i. e., unimportant or nonutilizable for the comparison process.

However, of much more interest to us than the previously-employed method is the question as to what has actually been thereby accomplished for comparative graphology, and what the identification of handwriting can undertake therewith in the practice. As we have seen, this method has rendered only one -- for that matter, quite insecure and, in many respects, improper -- gradation for handwriting characteristics, but only for the disguise of handwriting, not for the copying or forging of handwriting. That this does not suffice

for equipping the handwriting expert with the necessary tool is self-evident. Accordingly, it should not appear surprising that the comparison processes of the forensic practice of today are in such a grievous state.

Thus, we do not need more or less questionable gradations for the characteristics which are of importance for the comparison of handwriting, but rather a method which in general renders possible more certain work on the part of the handwriting expert. To overcome this lack is the main concern of this book. We are in need of no further experiments for obtaining results which can perhaps be made serviceable in one way or another for the comparison of handwriting. Enough has already been effected in this respect. The researches of Meyer and Klages and, we hope, our own investigations, as well, have produced quite ample bases for the recognition of the problems of the identification of handwriting. Now above all it is a question of finally rendering serviceable for the practice these findings. In this respect, up to now scarcely anything has been accomplished.

The Greek expression "methodos," from which the German word "Methode" [method] has derived, means literally "the way toward something." Toward what this way should lead in the forensic identification of handwriting has always been clear, viz., toward the exposure of the forger of documents. However, with respect to the questions of where this way courses, the point of its start, the direction it is to go, how it is to be controlled in order to attain the aspired goal, nowhere in the totality of the previous literature on the identification of handwriting is a practical guide to be found, leaving out of consideration the already-proved and

methodologically quite valuable suggestions of Klages. Sporadic counsels, which are otherwise casually made, could in part have a confusing effect, even then when they contain something proper, e. g., the indication that one should give attention to "pathological" characteristics, or the suggestion that one should resolve forms into movement strokes, not to mention the directions which are on the wrong track, such as the mere comparison of letters, or the indiscriminating employment of mere interpretation standards. If, in accordance with the well-known dictum of Kant (see Note following), method signifies a process in accordance with principles, then it can be established with respect to the identification of handwriting that principles have now been worked out to a point of satiety, that up to the present not one of us has seen a process by means of which these basic principles could be individually applied, realized, or made serviceable as far as the daily forensic practice is concerned. Even in the case of Klages, we have searched in vain for a real method for the practice. In our opinion, the distant separation of theory and practice is one of the principal reasons for the fact that the practice, which has been more or less forsaken by the science, so often today is obliged to get along with antediluvian means, so to speak.

[[Note] "Critique of Pure Reason, of the Transcendental Theory of Method," fourth main article, Die Geschichte der reinen Vernunft [The History of Pure Reason], 3.)

If we are now to make available to the identification of handwriting a method based on sure principles -- principles derived from forensic material -- if we are to make available a method patterned in conformity with the requirements of the

practice, of course this method can only be one which takes into consideration the achievements of modern graphology, one which does not indiscriminantly bind itself to the processes, standards, or manner of judgment of the latter science. Summarizing briefly, our method in accordance with the examination of the factual script for the ascertainment of genuineness or falseness, should attempt to find those places in the script in which the natural hand of the falsifier is recognizable. Then, proceeding from the total picture of the manuscript, the factual script, as a questionable script, should be so examined that the succession of the stroke picture, the movement picture, and the form picture are investigated comparatively with respect to conformative and contradictory characteristics. Finally, a total impression of the essence of both writers should be obtained in order to thus be able to decide whether it is a question of one and the same person.

The line of vision of the comparing handwriting expert, which now usually proceeds from the completed letter forms, is thus here radically reversed. It now proceeds from the vital form of the manuscript, via the issue of writing movement and the filling in of space, to forms, allowing the latter to accrue, so to speak, and thus become perceptible. Only through this subsequent determination of the formation of these individual manuscripts is it retrospectively possible to penetrate to the person of the perpetrator which lies concealed, so to speak, behind the forged manuscript, and to decide from the feeling-out of his essence whether he is identical or not with the suspect, the genuine handwriting of whom is under consideration (see Note following).

([Note] Up to now, the method drawn up here has nowhere been represented or employed in the identification of handwriting. As far as I have been able to ascertain, only once has an approximately similar concept been opened for debate, and this by the criminalist Hans Gross, who says that the person must first be constructed from the handwriting to be compared, only after which must the thus-constructed person be compared (Btsch. Jun Ztg. [German Forensic Journal], 1905, page 784 f.). This "strange" concept was apparently in general declined. (Cf. Georg Meyer in Archiv. f. ger. Schriftuntersuchungen [Archives of Forensic Investigations of handwriting], Vol 1, page 104 f.).)

It is obvious that our method holds to -- and must hold to -- the basic principles advanced above. The discussion of characteristics and their gradation has detailedly represented the standards applied in this method.

So much for the vindication of the method, its starting point, and the direction it must take. In the second part of our work we shall pursue step by step its process itself, and its individual applications.

B. THE PRACTICE OF THE IDENTIFICATION OF HANDWRITING

In this respect, the following should first be pointed out. The forensic identification of handwriting consists of the examination of the factual script and the script subject to identification for the purpose of determining whether they have been written by the same person. Handscripts, i. e., specifically, original handscripts, should and must be examined -- a fact which is repeatedly overlooked. Be a process of duplication ever so thorough, nothing

can replace the value of the original for the comparison of handwriting. This holds true not only for the factual script, but also for the script subject to identification. As we shall see later, a leading role in the comparison process is played by those characteristics which are obtained from the condition of the stroke and of pressure in the handwriting. However, in the case of no reproduction -- not even in the case of the best photostats -- can the details of stroke and pressure be as clear as in the original. Herefrom there arises for the expert the duty of demanding the remittance of a copy of the original scripts, or, if this is impossible perhaps because they have in the meanwhile been destroyed, of discharging his opinion only conditionally. There are cases in which the incorrectness of an opinion with respect to comparison can be traced to the fact that only photostats are made available to the handwriting expert. As material for the forensic identification of handwriting, photostats are not suitable or are at least unsatisfactory.

I. The Preparation of the Actual Comparison Process

Before going into the actual comparison of handwriting, it appears necessary as a rule, quite independently of already-available suspected scripts, to examine the factual script in order to determine whether or not it gives the impression that it might have been falsified, and to determine the extent to which and the direction in which this has been effected, if a falsification is ascertained. Above all, this is intended as an introduction to the methodological analysis. Only in individual cases will it be possible with certainty to rule out in advance the possibility of a forgery by means of such preliminary examination. Quite often, especially in the case of

factual scripts of greater encompassment, it will appear further indicated to examine these scripts in order to determine which type of personality of perpetrator could here come into question, and to establish and limit at the same time the circle of the suspect in question, thus facilitating the work of the investigating authorities. Finally, in consideration of the suspected handwriting, preliminary examination in accordance with the following question will invariably appear proper. In accordance with the capabilities evident from the manuscript, could the suspect have been able to execute the script in question? (I should not recommend as "preliminary examination" the examination of scripts, in particular of the factual script, from the viewpoint of the writing material, i. e., of writing tool and paper. Such is to be considered throughout the entire analysis, and primarily in the comparison of strokes. We shall come back to this in the treatment of the above, and in other places as well.)

The second section of this chapter is dedicated to the detailed discussion of a question which is often quite decisive for the success of the comparison, i. e., that condition which the writing material which serves for comparison must have in order to serve as a suitable basis for such comparison, and the way in which it can best bring about cooperation between the authorities and handwriting experts on a basis of understanding.

1. The Preliminary Examination of Scripts

The common process of criminal investigation in the case of falsifications of documents is the following. After the reporting to the authorities and receipt of the factual script on their part, the informer is asked by the latter whom he considers to be the

perpetrator. The suspect is at once interrogated, and, if the suspect denies the perpetration, the matter is submitted to the handwriting expert for review either after or before further investigation of the case. Should the opinion of the handwriting expert reveal that the accused is not the perpetrator, then valuable time and effort have been consumed, but the perpetrator has in the meanwhile been warned. On the other hand, the innocent person has been perturbed and, under certain circumstances, his reputation may be endangered. This could perhaps be avoided, if the handwriting experts had been contacted earlier. Every competent criminal-office official or public prosecutor knows how important the so-called first leap is, and that errors which are made here can in many cases never again be made good. Accordingly, the criminal-prosecution authorities should avail themselves of the help of handwriting experts to the greatest possible extent already at the start of the investigation of all cases of the falsification of documents for very often such experts can furnish the most valuable clues and leads as we shall shortly see. It is a more or less similar manner with respect to civil cases. Here the attorney to whom the client brings a presumably forged piece of writing, e. g., a will or a receipt book and names a suspect, will do well not to immediately bring charges against this suspect and to leave the disposal of the identification of the handwriting up to the court. On the contrary the attorney should consult a handwriting expert and see to it that a provisional examination be made to ascertain whether or not the document has been forged and whether or not the suspect could be the perpetrator.

Thus, as has been said, the handwriting expert can aid the criminal-prosecution authorities or the attorney in the early stages of the process, viz., in the ascertainment of falsification and in the search for the perpetrator.

The expert will first make an examination to determine whether the contested writing represents a forgery. This examination occurs for the most part in the case of obviously-disguised anonymous scripts. However, here and in all cases, of the greatest importance is the examination as to which degree and in which direction the deceitful alteration of handwriting has been carried out, since such examination almost invariably makes possible conclusions on the perpetrator in the later individual analysis. If the examination reveals unquestionable genuineness, then unnecessary investigations and processes can be avoided. With respect to this examination, however, it must be stressed with all resoluteness that it can here only be a question of a provisional judgment which in most cases requires substantiation by means of an exacting analysis. Accordingly, the expert should be quite cautious in ruling out with certainty the possibility of a falsification. In all doubtful cases, he should render a proper opinion with respect to the question of genuineness on the basis of a methodically-executed comparison of handwriting -- a comparison in which an unquestionably genuine sample of the presumed creator of the document serves as comparable script.

How, now, can one ascertain whether one deals with a falsification or not? Often this is not so easy. As we have seen in the observation of the psychology of the handwriting falsifier, the type of falsification depends in large degree upon the adroitness, temperament, and disposition of the latter and above all on the peculiarity of his personality. Thus, it appears to be of only conditional value to establish statistically the frequency or rarity of individual types of falsification. In any case, there are some phenomena in the script which can provide certain clues as to whether a specific script

could have been forged. Since almost every forger, in order to obtain a serviceable falsification, must write slower than he would ordinarily and must draw himself together in producing the foreign handwriting characteristics or in suppressing his own, almost every forgery will manifest the peculiarity of a slowly-produced manuscript and of strong stiffening, both of which are easily determined. Stiffening will often reach a point of rigidity, and the artificiality of the production will manifest uncertainties in the execution of strokes and above all in the direction of stroke. This is particularly the case with respect to falsifications effected through copying. Likewise, the rhythm of pressure or the distribution of pressure will often be disturbed. Or, inconsistencies may appear in the tempo, e. g., signs of more hastily-executed strokes of the pen in a script which has otherwise been written out slowly, and vice versa. Almost invariably, a disturbance of the unity of the script occurs; this can be recognized by the fact that, in accordance with the statement of Saudek, the sentence impulse is reduced to the word or letter impulse. Thus, sporadic "chopped-off" words or letters may appear in the script. This is above all important when it can be seen from the script that it is a question of a person who is otherwise adept in writing. Self-evidently, artificiality also disturbs the total rhythm of the script, i. e., the individual alternation of movement and pause which is ordinarily extended over the entire script. Complete lack of rhythm, or a slack flow of movement often attests an artificial creation of a manuscript. Whether a complete or partial lack of connectedness has been artificially or naturally produced can for the most part be recognized in the so-called immaterial connectedness, which will be discussed later. Likewise,

unnatural uninterruptedness can provoke the suspicion of a forgery, as can also fine disturbances under a very smooth surface, or repeatedly-occurring characteristics of inhibition. Frequent corrections are often called a principal characteristic for falsification. However, this is only applicable if such corrections can be traced to uncertainty or to unfamiliarity with the production of foreign handwriting forms, which of course is not always the case. Thus, there are very many -- for the most part, nervous people -- who habitually make small corrections of their script forms in writing, subsequently extending lightly-executed loops, and the like. For the most part, the reason herefor is exaggerated accuracy or self-control, or perhaps the fact that the corrections were necessitated because the writer does not concentrate and makes frequent errors. It is a like matter with erasures which attest more as far as forgery is concerned. As a result of artificiality, distortions not infrequently occur in the formation of script, or in the case of copying, exaggerations. Likewise, unnecessary, unorganic flourishes or other additions attest not infrequently a forgery, especially the arrangement of majuscles in this direction. However, since the majority of handwriting characteristics which attest forgery may also be found in unfalsified, natural scripts, one should not confirm too hastily the presence of a falsification.

On the other hand, the following attest the genuineness of the manuscript in question: it appears as if written in one stroke, as it were; it has been written energetically and in a consistent tempo; it possesses a uniform style, rhythm, and a natural execution of form. However, such uniformity can also be a deceitful facade, behind which characteristics of uncertainty and nonuniformity become evident upon closer examination. Here also,

one should give attention to the basic principle that a relaxed handscript will less often prove to be forged, since for the most part a falsification proceeds in the direction of hindrance of movement, even though this rule is not unexceptionally valid, as we have seen.

In the examination for the ascertainment of genuineness, it is also recommended to always take into consideration the possibility that the factual script might represent the tracing of a genuine script. Such will be above all recognizable in a certain unanimateness of stroke and movement stroke, as well as in a rigid, outward sameness in relation to the genuine script, instead of an animated correspondence with the letter. We shall later speak in more detail of this type of falsification.

This examination as to whether the factual script gives the impression of having been forged should be undertaken as a preliminary proceeding before every comparative analysis. (Klages pointed out as early as 1910 the importance of such examination in his excursus.)

We now come to another provisional examination which can offer, in accordance with the state of the case in question, the prosecution authorities or the person seeking justice quite especial aid, if such examination is undertaken by a competent expert, viz., the examination of the factual script for the purpose of feeling out the personality of the perpetrator, in order to find leads for the search for the latter. By means of such examination, in favorable cases, the circle of the person in question can be limited in advance.

Herefor, two possibilities come into consideration. The expert can make conclusions on the type of process used by the forger, by observing the script in question, and he can evaluate the personality of the forger. The manner in which, under certain circumstances, this is possible, has been represented by us in the chapter on the psychology of the handwriting falsifier, and we refer the reader to that section in order not to repeat ourselves. As we saw in that section, this very examination can provide certain leads with respect to the search for the perpetrator.

However, we can go still further and by recourse to analytical graphology seek to search out the character of the perpetrator and to draw conclusions therefrom. Of course this examination must likewise be cautiously undertaken and should be entrusted only to a graphologically-experienced expert, in order that such examination not render false leads. Further, it is only to be recommended in those cases in which longer factual scripts are under consideration, i. e., above all in the case of anonymous writings, but also in the case of falsifications of wills or contracts executed by copying. Hereby, it is a question of the following. If, for example, it can be seen from the factual script that it has been disguised solely by means of verticalness, enlargement, and a few flourishes, and a somewhat clear picture of the undisguised handwriting can be drawn therefrom, then it will be quite possible to draw up a complete picture of the character of the perpetrator. Similarly, even though in lesser degree, this will be possible in the case of the copying of a longer genuine script, which has been so poorly produced that the forger's handwriting is still everywhere in evidence. In such cases, in accordance with the basic principles of the art of interpretation, one will attempt to detect from the factual script the

outward attitude of the forger toward his environment, thus deriving therefrom those peculiarities of character which, manifesting a strong outward prominence, make conspicuous a person in relation to his environment. If, for example, one can determine that it is a question of a quarrelsome, restless, strongly affected, and aggressive person who tends toward conflicts with his neighbors; if, in addition, the degree of education of the person in question can also be determined (something which for the most part is easy to do), then one already has a certain conception with respect to the behavior of the perpetrator toward others. One can then select those who are conspicuous in this respect from the circle of those who are suspected on different grounds. If on the other hand the interpretation shows that the perpetrator is a shy, withdrawn person of great sensitiveness, perhaps of dammed-up, sometimes explosively-outbursting emotions, then this again represents a warrant for the apprehension, so to speak, of the perpetrator. The circle of suspects from which these people are to be selected is a matter of outward circumstances, whereby, in the question of possible motive, as we have seen, the handwriting expert can likewise provide leads in many cases. Later, in the discussion of the limits of the identification of handwriting, we shall speak in detail of the possibility of the examination of other scripts for the detection of essential circumstances in the factual script. For the present, it might be mentioned in passing that from the manuscript alone we are incapable of determining neither sex, nor exact age, nor a certain disease, on the basis of the present-day stand of graphology.

If scripts (subject to identification) of suspects are already under consideration, then it is appropriate to undertake in

regard to these scripts a preliminary examination of a similar type, in order to judge whether certain suspects among those under investigation can be eliminated in advance as being perpetrators. If the expert is herein successful, he thus spares the authorities much unnecessary work and the suspect discomposure and annoyance. In this direction, it is recommended in all cases, as an introductory process in anticipation of detailed expertise, that an examination of the suspected script be carried out for the purpose of ascertaining whether the suspect could have been at all capable of the perpetration. In an interpretation of the handwriting of the suspect, it is here often recommended that the following be determined: whether the perpetration could be attributed to this suspect in accordance with his moral traits; whether he would be capable of this perpetration in accordance with his character; whether he appears, for example, covetous or malicious, aggressive, scandal-mongering, envious or jealous, spiteful and mischievous. In our opinion, such a process cannot be sufficiently warned against. Even if the suspect might have a number of such peculiarities as would make it appear that he were capable of such a perpetration, this is nevertheless not indicative at all that he has actually committed the act which is attributed to him in the concrete case. Moreover, all the afore-mentioned unlovely characteristic traits need not obligatorily have a criminal outcome. The malicious person and the aggressive person can give vent to these peculiarities, for example, solely in their immediate environment; the jealous person can beat his wife or bring suit for divorce; the covetous person need not of necessity apply himself to the forging of a will; and so on. Thus, Binder has likewise come to the quite surprising conclusion that querulous persons seldom become anonymous writers;

the reason herefor is that they prefer open aggression. Speaking in general, it should never be forgotten that criminal tendencies lie dormant in every person -- tendencies which in the case of most people remain latent for a lifetime, however. In his day, Goethe himself is said to have confessed that there was no crime that he could not have committed in the course of his life. Thus, we did not consider it proper to employ in our work the researches of Pulver (Trieb und Verbrechen in der Handschrift [Inclination and Crime in Handwriting]) and Koca Wieser (Der Rhythmus in der Verbrecherschrift [Rhythm in the Criminal's handwriting]) on criminals' handwriting. The consideration of the moral traits of the suspect, which are obtained from the interpretation of the script, also entail dangers for handwriting experts. Should examination in this respect turn in an unfavorable report, so to speak, this can easily provoke a certain involuntary bias against this suspect. This bias, unconscious as far as the expert is concerned, evokes in that expert the tendency to consider this suspect the perpetrator. This can then adversely affect, without his being aware of it, his objectivity in the evaluation of the finding of the analysis of the handwriting. Hereby, the interpretation of the scripts of other suspects could perhaps produce a similarly bad report on their character. Inversely, the ascertainment of favorable peculiarities can predispose the comparer in favor of the suspect, although the latter might indeed be the perpetrator in the concrete case.

As much as we object to the interpretation of the script subject to identification for the purpose of determining from the moral qualities of the suspect whether he can be considered as having committed the perpetration in question, just as much do we

recommend such an interpretation in accordance with the consideration as to whether the concrete falsification could be attributed to him, upon evaluation of his tendencies and capabilities, i. e., whether the suspect be at all capable of the act. (Klages, loc. cit., has already indicated the importance of this examination.) In the discussion of the psychology of the script forger we have spoken of the examination of the capabilities of the latter, as they can be manifested in the factual script. Now it is a question of a matter that is quite the reverse: to determine from the handwriting of the suspect whether or not he might have been capable of perpetrating the falsification under consideration. (An example of such an examination can be found in Appendix C.) It has often been asked: of what does this capability actually consist? Klages quite justifiably places especial value on the general capability of disguise. Saudek formulates capability in saying that it depends on three elements: visual memory, visual impressionability, and graphical expressionability, i. e., expressed a l'allemande, such depends on the capability of easily comprehending and retaining visual impressions, and the possibility of reproducing these impressions in handwriting. Georg Meyer expresses this more simply in saying that the falsifier needs a sense of form and adroitness with the pen. His definition also applies to disguises, whereas that of Saudek is intended to encompass, and indeed only applies to, copying. However, both appear incomplete to us insofar as it seems to us that concentration capacity is above all decisive for the task of the forger, viz., in disguising and copying, since such capacity represents the principal prerequisite for the ultimate success of a falsification. Further, the prospects of the success of an exposure through the comparison of handwriting depends most of all on the strength of such concentration capacity.

Thus, the evaluation of the results of such interpretation may perhaps be represented by the following. If the script subject to identification appears deft, relaxed in the execution of movement, indicative of the mastery of all directions of movement, multifarious in form, possessive of smooth, flowing strokes and an alternating or undifferentiable type of connectedness, then one is able to directly conclude a resourceful, in no way stereotyped, versatile writer who, in accordance with his capabilities, might be able to execute quite diverse and difficult falsifications. On the other hand, a gross and primitive falsification could not be attributed to such a writer. Just as little will it be conceivable that, in the case of a strongly enriched and full script subject to identification, the creator of such a script could have completed a very barren, uninventive factual script. Inversely, if the script subject to identification appears strongly stereotyped and unelastic in movement, connectedness, and form, or unimaginative or quite awkward and crude, then one will not be able to attribute to this writer a clever, adroit disguise with a peculiar, cleverly-executed style of disguise, or the good copying of a complicated foreign manuscript. However, hereby it should also be explicitly pointed out that such ascertainties can be of quite great indicative value; however, that they are not always certain indications. In the practice one sometimes experiences quite remarkable surprises. Thus, occasionally the writer of a quite simple script turns out to be a clever copier of a complicated foreign script, or the creator of an imaginative disguise. In such cases it is to be assumed that the forger must have had quite special capabilities which perhaps were not directly perceivable from observation of his manuscript. Likewise, the strength of a criminally-inclined will and the possibility of previous practice can be of great consequence. Thus, here caution is required.

Now, with respect to the foregoing, there is occasion to point out the actually self-evident fact that all these ascertainment in regard to falsification capabilities invariably have negative indicative value. If, accordingly, it is to be assumed that the suspect is incapable of having perpetrated the concrete falsification, then this is one of the best indications for his exoneration. If, on the other hand, it can be assumed that he is capable of this falsification, then of course there are no grounds for doubting that he could actually have perpetrated the falsification, for the same could be ascertained in the handwriting of many other persons. It is a somewhat different matter when not only are the capabilities present, but the type and manner in which the falsification was executed are in conformity with the writing inclinations of the suspect; when, for example, a strong tendency to trend toward the right is manifest in the script subject to identification, and this same tendency, perhaps somewhat suppressed, is evident in the factual script. In this case, a certain doubt in regard to identity would arise, which would have to be confirmed through the valid analysis.

However, a very important observation must be added to the question as to whether or not a suspect might have been capable of a falsification. The judgment of this question depends not only on the tendencies and capabilities of the writer, but also on the difficulties entailed in the task which the writer has assumed, i. e., on the objective difficulties entailed in a falsification. The significance of the foregoing is in part overestimated, in part underestimated; therefore, in the following we shall go into this matter briefly. The afore-mentioned difficulties are greater in

copying than in disguising. Whereas, in the case of the latter, the disguiser still has some freedom of choice as to the manner in which he will undertake the disguise, e. g., whether such shall be undertaken by means of a partial alteration of his own hand or by means of the creation of a disguise style, whether he shall choose as a model a decorative manuscript or some other; the copier, for his part, is strictly bound to his copy, i. e., the manuscript to be imitated. Not only must the copier imitate as well as possible the distinctive forms of the script to be imitated, he must also compel himself to carry out a succession of movements and a distribution of pressure to which he is quite unaccustomed; he must also conform to the rhythm of the foreign script. In order to render a really good imitation, he must actually familiarize himself with the foreign personality and the latter's expressive demeanor. In accordance with the striking statement of Georg Meyer, handwriting is indeed "a complicated structure which is not arbitrarily constructed by means of simple rules, but is something which develops more or less unconsciously from the total individuality of the writer in the course of an evolution lasting decades" (Archiv. f. ger. Schriftvergleichung, 1909, page 32 f.). The possibility of previous practice, which can compensate for much which is lacking as far as inborn ingeniousness is concerned, plays a great role not only with respect to the question as to whether a falsification can be attributed to a suspect, but also with respect to the ultimate success of a falsification. This possibility exists when models of the script to be copied are available to the falsifier -- models which he can copy, the forms and movements of which he can assimilate by means of repeated attempts. It also

represents a facilitation for him if it is possible for him to repeat the falsification in the case of its failure, i. e., in disguising, or in the case of copying in which very many incompletely executed official forms are available to him. On the other hand, falsification is rendered difficult when the falsifier is obliged to adapt his product, e. g., a forged signature, to a certain space, e. g., when he is obliged to place the forged product in a certain place on a contract form. Of course the condition of the script to be copied is also important. The more individual the latter, the more difficult will it be to match it in general -- and of course less difficult with respect to forms than with respect to the freedom and multifariousness of movement strokes which can be virtually or definitely inimitable. On the other hand, with respect to forms, the distinctive are of course still easier to match than the quite indistinct. Likewise, the speed and fluency of a handscript renders difficult its being copied. Much easier to copy are the familiar flourishes in a signature placed there as a protective measure against being copied. In turn, disguising will become the more difficult and dangerous for the forger, the more the latter attempts to maintain uniformly throughout a quite special style of disguise, the more he attempts to render the forms of the disguise as dissimilar as possible to those of his true hand, inverting all aspects wherever possible, since this leads to distortions, exaggerations, and abortive strokes and provokes the danger of constant faux pas.

2. The Procurement of Suitable Material for Comparison

Not a few comparisons of handwriting are doomed in advance to fail solely because no suitable material for comparison is available --

material which suffices for the execution of an orderly comparison. Not only has this been the experience of the daily practice; it has also been an old complaint which from time to time is repeatedly heard in professional circles. Manifold indications have been made, partly by authorities, partly by institutes, as to how such material is to be procured and the manner in which it is to be produced. (The best such indication known to me has been brought forward by Jeserich, Arch. f. Krim., Vol 93, page 44 f.) Such indications have previously been of little avail. One of the reasons for this is that they have been resigned to subordinate organs which were not equal to the task. It can simply not be demanded of the constable or the police officer that he judge which material for comparison is suitable for the handwriting expert and which is not. The grievance with respect to the insufficient procurement of material can only be allayed by getting at the root of the trouble, but the handwriting expert must also be intercalated as early as possible. It might here be in order to recall that which has been said above in regard to the importance of the first leap, and it would be shortsightedness on the part of the criminalist-official or public prosecutor if he were not to confer with the expert in the procurement of comparison material. Finding themselves in the same position are the defender who seeks to produce material for the exoneration of the accused, and the lawyer who intends to institute legal proceedings on the basis of a document presumed forged. If strong suspicion in regard to a certain person does not exist, the expert will attempt to ascertain something of the type of the possible perpetrator from the factual script, thus contributing to the production of proper comparison material. From the manuscripts of several suspected persons, he will, if possible, make a provisional

selection and at once eliminate all irrelevant material in accordance with the manner and viewpoints which we have delineated above. It should once again be emphasized that these examinations of the factual script or the script subject to identification are only provisional. Therefore, much that at first appears unutilizable can nevertheless become important later. Thus, it is recommended that the findings of such provisional investigations be fixed in writing; perhaps a brief opinion thereon should be made.

To be then subjected to comparison are the manuscripts of those persons coming into question in accordance with the results of the preliminary examination in connection with the other ascertainments. (Of course we cannot procure further factual scripts. However, in all cases the authorities should concern themselves as to whether other falsifications or anonymous writings of the same type, which could be traced to the same writer, have not appeared.) It is recommended that one not act too anxiously; it will be easier to find the perpetrator from among a greater number of suspects and their handwritings. One will be in luck if in a single suspect one has found the right person, if the latter is the only one coming into consideration. Should there exist strong suspicion toward a certain person, should it nevertheless appear improbable that this person could have written the factual script, then, under certain circumstances, it is recommended that the scripts of the next of kin or friends be examined. For if the person in question has not carried out the falsification himself, he could have utilized another person for this purpose. He will seek out principally those who are his closest confidants, for the sake of his own security and due to the danger of being exposed. The procurement and examination of the scripts of relatives is quite

to be recommended even if the provisional examination or the final analysis shows that the perpetrator and the suspect could not be identical, but that nevertheless there exists a striking similarity between the writing strokes of the factual script and the script of the suspect. Here, the handwriting expert should always keep in mind the possibility that the factual script could have originated from a relative of the suspect. In handwriting there are doubtless at times family resemblances, according to our experience, although this has sometimes been contested. Just as at times relatives can be similar in facial features, in body build, in outer manifestations including single gestures, or in gait; so can the sameness of inherited characteristics be expressed in the movement strokes of handwriting, in which latter inborn tendencies are mirrored. Thus, under certain circumstances, from this point of view it is well if one has available the scripts of relatives as material for comparison. Of course such scripts will only be called into question if there is suspicion that such relatives might have participated or might prove subject to investigation, for in criminal prosecution one must expressly avoid drawing in unnecessarily other persons into the investigation -- persons who might perhaps be quite blameless. It is here more a question of providing an incentive to experts to give attention to such possibilities. The obtaining of the handscripts (even in the manner of searching for them) or the summons issued to the suspect to produce such of course represent duties of those officials conducting the investigation; the handwriting expert merely functions as an advisor. Herefor, in the civil process there is the below-mentioned detailed process of proposal.

Which type of comparison material is the most suitable for the comparison of handwriting? Which scripts of the suspect are to be advanced? From this point of view, it is to be stressed that too much evidence can never be obtained. The more comprehensive the writing material, the greater the chances of success for the handwriting expert. Of course, mountains of manuscripts should not be indiscriminately produced; rather, one should make a selection as soon as possible from the scripts already found and those later produced. According to our experience, an analysis can best be carried out if the following scripts which can be used for comparison are available:

1. At least such that have been written as nonchalantly as possible, e. g., notes or sketches made for the writer's own information, or diaries, if such are still available, as well as informal letters to relatives or friends.
2. Wherever possible, a carefully-executed handwriting, e. g., petitions to authorities, letters of application, available autobiographical sketches, contracts, promissory notes, wills, and the like.
3. Handwriting samples especially obtained by the expert for the purpose of this investigation, or several such samples.

From such material one will best recognize the possibilities of the suspect with respect to forming his manuscript in various manner in accordance with the individual purpose pursued, i. e., the breadth of the variation so to speak, of his manuscript formation and his handwriting capability. The establishment of the foregoing is of great importance for the comparison of handwriting:

for one thing, as to whether the falsification in question can be attributed to the suspect in the above-discussed sense. Further, and most important, one recognizes therefrom the various types of movement strokes, filling of spaces, and forms he disposes of in his true hand -- features which, if again found in the factual script, could attest the identity of the suspect and the creator of the factual script. The latter will be discussed in more detail with respect to the alternation of characteristics and the manifoldness of form.

To the greatest possible extent, the writing material should have originated at approximately the same time as the perpetration, since every individual manuscript more or less becomes altered in the course of ones life, as we have already seen in the observation of the so-called acquired handwriting. To a special extent, this applies to very young and to aging people. Since a handwriting can suddenly be quite strongly altered in the course of ones life, e. g., in the presence of inner crises, an opinion on the basis of old comparison material is invariably somewhat uncertain, and the expert will only be able to give his opinion with reservations. In extreme cases the expert will be obliged to withhold entirely his opinion.

The question of the obtaining of handwriting samples requires a special and detailed discussion. Such obtaining of samples is carried out in all cases, as far as is possible. If such is to be carried out in all cases, it should be undertaken by the handwriting expert, since only he can judge which type of handwriting sample he requires for his comparison processes in the specific case and what should be looked for in the sample. Thus, for example, it makes

little sense to obtain a sample in a running hand, in the case of a factual script which has been written in printed letters. It is a like matter with respect to obtaining a sample in German-style handwriting, if the factual script has been written in Latin-style. However, these are only two examples; in turn, each case can make other demands on the condition of the handwriting sample. The obtaining of a sample is best carried out by means of dictation. In this case, the explicit warning should be made that the suspect should not be permitted to copy the factual script or parts of it, because it would then be easy for a clever writer to disguise his true hand, which would of course make difficult the comparison process. Self-evidently, it should be so that the suspect is never allowed to touch the documents in question, a thing which unaccountably again and again occurs. The dictation, supervised by the expert, can take place at the office of the authorities or at the office of the expert, whereby the suspect is summoned by the investigating authorities to report to the expert for the purpose of rendering the handwriting sample. It seems incomprehensible that in this matter many authorities create difficulties for the expert, for from a legal standpoint there cannot be even the slightest objection against such a process, if, as is self-evident, it occurs in the absence of any compulsion. In most cases the suspect will comply with the summons, in order to avoid unfavorable conclusions which could be drawn from his refusal to comply. Nevertheless, if the suspect does refuse, then there remains only the summons to appear before the authorities, at the offices of which the expert obtains the sample. The fact that no accused person can be compelled to produce a piece of writing which could then be used against him was pronounced by the Imperial High Court of Justice as early as 1887 (RGStr. [Reichsgesetzstrafrecht --

imperial penal law 15, 319), and this of course also applies to the process of investigation. The Imperial High Court also decided that the piece of writing need not be produced before the judge; it is only to be established that it originates from the person in question. In our case, this means that the handwriting sample may be obtained by the expert.

With respect to the obtaining of the sample, attention should be given that it be executed by means of the same writing tool as has been the factual script, i. e., with a similarly stiff or flexible pen, or a similar pencil, lead pencil, copy pencil, ink pen, or any other tool which may be pertinent in the specific case. If the factual script has been written with a pencil, it is recommended that a sample written in ink also be obtained. As a matter of principle, writings for the purpose of comparison should not be executed with a ball-point pen, unless the factual script has been written with such. This type of writing renders quite difficult the examination of the individual condition of stroke and the distribution of pressure, as we shall see in the discussion of these handwriting phenomena. The paper itself should resemble that of the falsified writing, above all with respect to its absorptive capacity, and should be of the same format. In the case of the falsification of forms, forms of the same type should be employed wherever possible, and the handwriting sample should be entered into the blank spaces in a manner similar to that of the factual script. On the other hand, with respect to addresses and data concerning the addresser, the distribution of space on the envelope should be left to the suspect, since therefrom, under certain circumstances, important conclusions can be drawn (this will again be

discussed later). Self-evidently, if the factual script was found in an envelope with an address and perhaps with a fictitious name for the sender, a handwriting sample should also be taken from this.

To the greatest extent possible, the handwriting samples should be written in the same situation in which the factual script was executed. If, for example, it is a question of scripts which have been drawn or written on a wall, or of notes which have been tacked to the wall before being written, which, for example, can be divined from the heaviness of ink in the lower part of downstrokes of the factual script, then the handwriting sample should wherever possible be written in the same position with the paper held at the same height.

In accordance with our experiences, the exact text of the factual script is best employed as the text of the dictation. On the other hand, if in exceptional cases there are some hesitations as far as the foregoing is concerned, then at least the same or similar words, or at the very least, the same letters as appear in the factual script should appear in the handwriting sample. The samples should be written in the same handwriting system as the factual script. Should the suspect otherwise tend to use habitually another writing system, i. e., Latin style in the presence of a factual script written in German style or vice versa, then a sample should also be taken of a writing in the alternate style. If the forger uses a specific type of writing, e. g., printed letters, especially-printed letters, or a specific type of ornamental writing, then the suspect should be required to prepare a sample in whichever of the foregoing types is in question.

The dictation should first occur at a normal tempo; by and by the dictation should be accelerated up to a point of rapid writing. Or several different samples can be undertaken in various degrees of speed. For one thing, the foregoing is necessary, because it hereby shows much of the possibilities and capabilities of the writer, as far as his being able to diversify his handwriting is concerned. It is further necessary because rapid writing most certainly prohibits a disguise of ones hand in writing the sample.

Much has already been written on such disguises of handwriting. According to our experiences, this danger is overestimated, for during dictation a clever disguising of ones hand is not really so easy to execute and can easily be observed by the expert. Nevertheless, one should not presume an intentional disguise with respect to every alteration of handwriting in the sample, in relation to ones free hand. The excitement caused by the accusation or the compulsion of the dictation, the embarrassment at having been called in by the authorities, can easily and unintentionally influence the appearance of the script resulting from the dictation. (Cf. also Karger in Die Schrift [Handwriting], 1935, "On the Significance of the Psychological Analysis of Handwriting.") Special precaution is called for when the dictation is taken by persons who have been imprisoned pending the results of investigation. In accordance with experience, mental depression, brought about by imprisonment (it must not of necessity be a so-called "prison psychosis"), influences strongly the appearance of the manuscript -- often to an extraordinary degree. The alterations of handwritings effected by imprisonment, which are known to me, tend principally in the direction of strong and the strongest compression and

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reduction of script expansion, which of course is psychologically quite conceivable. Whether the depression induced by imprisonment has such an effect in all or in most cases would have to be established by a special investigation, which would certainly prove rewarding. However, even when there is unmistakable indication of a disguise of handscript in the sample, which of course represents grounds for suspicion, this nevertheless does not represent evidence against the suspect, for just as easily as a guilty person can lie in an investigation, just as easily -- perhaps from fear -- can the guiltless suspect disguise his handwriting sample. The importance of such disguising in the question of guilt is to be considered only by the judge on the basis of his knowledge of the entire material of the process; here, the expert should withhold his opinion.

With respect to the production of material for comparison in general, the following may be mentioned. If there is suspicion that the perpetrator has executed the forgery, using the handscript of another person in order to cast suspicion on that person, then of course a genuine specimen of the third script involved should be produced. It is self-evident that in the case of a copying of a handwriting both the handwriting of the suspect and that which has been copied are to be produced. Something which should also be self-evident but which is not always heeded is the following (which should be indelibly impressed on the authorities): The commandeered or provisional comparison handscripts must without doubt have originated from the suspect, and wherever this is doubtful, this question must be examined before the comparison handscripts are turned over to the expert, since otherwise they are not

suitable for comparison purposes. It must likewise be quite clear that the comparison handscripts have not been altered by the suspect for the purpose of concealment.

Here, we cannot go into further detail on that process which is customary in the German civil process with respect to the production of documents (the process which concerns the factual script and the script subject to identification). This is delineated detailedly in the ninth title of the ZPO, Article 415, f. It is not necessary to represent it here, because it plays a relatively small role in the practice. For the most part, this detailed, time-consuming, and complicated process is avoided in that the lawyer of the complaining party files a legal complaint with the prosecuting authority and leaves up to the latter the production of documents, just as in the case of the further execution of the entire process. If the civil process is already pending, then a move in accordance with Article 149 of the ZPO can be proposed on the settlement of the civil process until the conclusion of the penal process. Thus practically remaining for the process in accordance with Article 415 ff. are only those cases in which the execution of a penal process is not possible, e. g., because the perpetrator has in the meanwhile died, a fact which of course does not hinder the execution of the civil process against the heirs. At times, comparison material can also be taken from the collections of handwritings of many central police stations, e. g., the Federal criminal court or the cantonal police authority of Zurich, where the handwritings of all "writing criminals," which have appeared in a specific district, are kept in accordance with a special registry system. This system will principally be of use in the case of writers of a series of scripts. Further, it serves more for the

purpose of searches, analogously to fingerprint collections.

(Those who are interested in more details in regard to the foregoing might consult the quite informative article on an address given by Lieutenant Bachmann of the cantonal police of Zurich.

This article appears in the Swiss paper Der Polizeibeamte [Police Official], 1951, page 308 f.)

Only marginally, a few more remarks on the treatment of writing material shall be added to this chapter, because they appear necessary insofar as here the necessary carefulness is often lacking. Not infrequently the assessor -- and above all, the higher assessor -- receives the factual script, which in all cases is irreplaceable, in a state which renders difficult to an extraordinary degree the technical examination, be it that it has in the meantime become smeared, be it that it has been distorted by subsequent additions, in the case of which it is often no longer to be certainly established whether the additions are constituents of the original factual script or whether they can be traced to the official or expert concerned. It should be a basic principle that the factual script be taboo, so to speak, for both official and expert, apart from seeing to it that the original script, or the script subject to identification, not be distorted by descriptive, indicative, or emphasizing strokes. In those cases in which the expert considers such, perhaps for the purpose of demonstration, as absolutely necessary, he should make his notations on a photostat of the original -- not on the original itself -- since such can have a disturbing effect and, under certain circumstances, can distort the entire handwriting picture.

With respect to the preservation of the writing material, we should recommend that the authorities place the factual script and the scripts subject to identification in a special envelope which should be large enough to prevent unnecessary folding and bending. Further, the authorities should assemble everything along with the documents in a special portfolio, or they should so fasten the envelope that the writings can be removed without having to take apart the other documents. For the expert must be able to get at and assemble the scripts for examination and comparison, independently of the other documents. Most inconvenient is the custom which is prevalent in many Länder of the Federal Republic, i. e., permanently fastening together the documents rather than merely loosely binding or clipping them together. Should this also be the case with the manuscripts, then this can make considerably difficult the examination of them, because an extensive leftward-trending stroke is usually no longer visible. This has a particularly disturbing effect if a manuscript must be photographed. There then remains a choice of taking apart the whole file, which is dangerous as far as the order of the documents is concerned, or of renouncing the reproduction of the left border and usually a part of the writing of this border as well.

II. The Execution of the Method and the Process of the Comparison of Handwriting

1. The Seeking Out of Faux Pas on the Part of the Forger in the Factual Script

The process of comparison begins whenever the factual script and sufficient and suitable comparison material are available. It has been a point of dispute whether the manuscript of the suspect or

the factual script should first be examined. We recommend beginning with the observation of the factual script, and for three reasons. First, because such will already have been examined in one respect, viz., whether it has indeed been forged; thus, one is already familiar with it to a certain degree. Second, the comparer might not be able to approach the factual script quite so impartially, if he already has a strong visual impression of the handwriting of the suspect. Thus, he may no longer receive the appropriate impression of the factual script; rather, he may view the factual script mechanically in relation to the other from the point of view of comparison. In order to understand the third, and indeed the most important, reason why we recommend commencing with the factual script, we must once again stop to consider the end purpose of the comparison. With our method, the intention is to penetrate to the person of the perpetrator on the basis of the factual script, in order to compare the person manifest in the latter with the person of the suspect which may be concluded from the script subject to identification, and thus to be able to determine whether or not both are identical. Under these circumstances, is it really worth while to rigidly take it upon oneself to compare characteristic against characteristic or even letter against letter, quite without giving consideration as to whether or not this writing stroke of the factual script has been artificially produced through the formative will of the forger, or whether or not this stroke is a natural part of the phenomenal picture of the actual handscript of the forger? Of course, basically, the willful and knowing handiwork in the factual script is of no interest at all to us or only indirectly, for what we seek is not the peculiarities of the falsification product but the true essential expression of the forger embodied in the factual

script, i. e., the forger's natural hand which he has concealed behind the hull of disguise or of imitation. The whole purpose of the comparison process is to remove this hull, to remove the make-up from the handwriting forger -- this actor on the stage of handwriting, as it were -- to tear away his mask, i. e., to expose him in the truest sense of the word. Thus, it is not our intention to satisfy ourselves with the mere observation of the hull thrown up by falsification and disguise, rather we will first of all make the attempt to find breaches in this hull through which we are able to penetrate, i. e., to find starting points by means of which we are able to remove or expose the hull of disguise.

In addition, we must have a clear perception with respect to the following: are there such betraying aspects in the factual script? What is their cause? What do they look like, and how can we find them?

We already know that there are such -- such which are the result of the insuppressability of certain movement impulses and writing habits which are expressed partially in complete faux pas, partially in handwriting phenomena which make it still apparent that such forces were indeed suppressed but that their suppression has not been fully effectuated. We have already represented in detail in the section on movement and formative forces the reasons for this phenomenon and have formulated in the first basic principle the findings of our investigation in this regard. We might refer to this latter basic principle, as well as to that which has been said on the psychology of the handwriting forger, in order not to repeat ourselves. We have yet to make an analysis with respect to the diverse forms of phenomena of the faux pas of the forger, and,

therewith, with respect to the type and manner by means of which these can best and most certainly be detected. We have likewise already investigated the type, extent, and frequency of unconscious and unintentional reversions to the true hand of the falsifier, and how such are dependent on the falsifier's degree of adroitness, ability to forge, and concentration capacity. Hereby, it might again be stressed that herefor, in addition, the objective difficulties of the concrete falsification, which have also been previously treated, are decisive. Of course, in addition to all the preceding, it is of great importance to know the type of handwriting habitually employed by the forger. In the case of disguises, those who normally write an indefinite, little singular, script will be best capable of perpetrating an alteration of hand, without having to fear reversions. Such will also find it most easy to adapt to a script which is to be copied.

With respect to the phenomenal forms of faux pas, it should first be established that such are expressed quite diversely, each in accordance with whether it is a question of a falsification through disguise of one's true hand or through the copying of a foreign hand. In the case of the former, such will be principally recognizable as departures from the disguise style, for every dis- guiser ultimately seeks to produce the latter in a disguise of handwriting, even though it may be of the most primitive type. In the case of copying, the faux pas will be expressed as departures from the foreign manuscript which is copied. In this case, above all with respect to very clever but obstinate forgers, at times appearing will be strokes which correspond to neither the script nor the forger's true hand. However, such misfires, i. e., unsuccessful places in the copy, by and large are recognizable as having

been forced by the breaking through the barrier of the forger's own writing forces, habits, and tendencies. Thus, one may reckon that one has before one the natural script of the falsifier.

How now do we find those places in the factual script in which the handwriting forger, as an actor, has stepped out of his role? As far as the method is concerned, it should be mentioned here in anticipation that we do not yet concern ourselves at the beginning of the comparison with the examination of the factual script with respect to individual characteristics, since this will occur later in the eventual systematic individual analysis. Rather, we first seek out for the time being entire parts of the script, i. e., words or word series -- under circumstances, entire sentences -- but also mere syllables or letter groups, which have found their way into the falsification product via the true hand of the forger. Thereby, we shall so proceed that, by next examining the factual script, we are able to determine which places are not in accordance with the total impression of the script of the falsifier, from the general observation of the appearance of the factual script. The determination of such becomes the easier, the more formed out the factual script, as such, is, i. e., the more pregnant and uniform in general the style of disguise or the script which is copied appears. Especially striking are such parts of handwriting which are not altered through falsification, above all in the case of strongly stylized scripts, such as printed letters and quite pronounced decorative scripts (Cf. Figure III with Appendix C). However, here their comprehension is most pressing, because through such strongly-stamped form types the naturalness of formation and even movement strokes are for the most part extensively suppressed, so that often these places of

faux pas, as really certain starting points for the comparison process, escape us. In the case of indefinite handwritings as the object of a copying, the reversions to the true hand of the forger will be exposed through stronger consequences of the movement and the pregnancy of the form stamp. Of course such strokes which are not in accordance with the remaining handwriting picture, in the case of disguises, can originate from falsification, i. e., they can be inconsistencies of the style of disguising, be it exaggerations or mistakes made in the disguise by the forger in relation to the model assumed by him. Therefore, all the parts of the handwriting which are not in agreement with the remaining handwriting picture must be examined to determine whether or not they make a natural impression. Thus, as reversions to the natural hand of the falsifier, such parts of the manuscript which manifest a lesser degree of stiffening in relation to the remaining factual script and which appear more relaxed, i. e., manifesting a lesser number of inhibition characteristics, will above all come into question, in correspondence with the four experiences set forth in our basic principle. With respect to the concept of stiffening, which has been elucidated more detailedly above, it should be repeated that it is here, in regard to faux pas, above all a question of the contrast of enforced, artificially-effected uniformity to a point of rigidity, in relation to an animate flowing -- a vibration, so to speak -- of the natural script in essential characteristics, i. e., here, above all, in size, position, breadth, pressure. A seemingly infallible indication of nonartificially-written or formed handwriting is the presence of a natural rhythm in movement and form, i. e., a periodically light, ever-recurring alteration above all in the above-mentioned characteristics --

phenomena which we shall later discuss in more detail. In addition, there is in the natural script almost invariably a certain flowingness and a natural interconnection of writing strokes in the whole. Here, with respect to the artificial creation of handwriting, we come back to the pertinent formulation of Saudek in regard to the reduction of the writing impulse. The reduction to the letter-impulse, which usually effects a certain incoherence, if not a dismemberment, of the artificial script, will be lacking in the undisguised characteristics which have crept into the factual script. These latter characteristics will be borne by a uniform impulse which here extends uniformly over several words, or an entire sentence, or at least to a word or a syllable -- even to the entire undisguised piece of writing -- thereby effecting a natural coherence which is not only limited to the so-called connectedness, but is visible in an overlapping uniformity of the writing stroke. Also to be given special attention are the following: Whether the pressure at those points which we are investigating for the determination of faux pas manifests itself as elastically alternating, in correspondence with the stretching and bending of the fingers participating in the writing; or whether the unrhythmical pressure produced by the unnatural writing of the forger is perceptible. Also of importance is the speed of production of handwriting. The artificial script -- be it a disguise or a copying -- can be produced only in the most moderate tempo: in the case of the disguise, because of unfamiliarity with the forms to be created; in the case of copying, because the copier must be concerned with accurate matching. Thus, if to be found in the factual script are places which have been written considerably faster than the remaining script, then it can be assumed with some degree of certainty

that some natural movement impulses of the forger have compelled this acceleration. It can be assumed that, as is said, the temperament of the forger has penetrated the handwriting, i. e., that we have before us his true hand. It is a like matter with respect to connecting forms and the actual script formation. If word series, individual words, and letter series in pronounced festoon or thin-line connections are found in the factual script which is constructed with angular connectedness, then considerable suspicion exists that faux pas are present. Or an exaggeratedly disguised script may suddenly become thin and temperate, or the same phenomena may be manifest in the unsuccessful parts of a falsification executed by copying. Or a large and broad factual script may suddenly become smaller and more concentrated. Attention should be given all such phenomena, in order to find success in the seeking out of reversions of the forger to his true hand.

In many cases, the fact that the forger has corrected such faux pas will render easier for us the detection of such, or their presence will be the more evident. Should the forger fail to completely erase through cancellation that which he first wrote and the latter remains in evidence, then we have one of the rare cases in which we can see the forger at work, as it were, and can pursue the process he has carried out. Such fortunate cases, which are not at all seldom, are of great value for the comparison of handwriting, because, with respect to that which remains in evidence under the correction, in most cases there can be no doubt that this is the true hand of the forger -- a certainty which we otherwise only rarely attain. Of course one should have a clear perception that not every correction must of necessity be connected with a faux pas. It can also be that the forger was not pleased with a script-

disguising stroke, and that he then erased it. Whether this be the case can usually easily be determined from the still-recognizable strokes. However, one must further have a clear perception that there are also harmless corrections, so to speak, by means of which occasional orthographical mistakes or other mistakes have been rectified. Moreover, there are many writers who have the habit of making random corrections after looking over their writing, as has already been mentioned earlier. Such corrections are cosmetic reparations, as it were, or are effected for the sake of greater clarity and better legibility. Occasionally, a role can here be played by the phenomenon, long familiar to graphologists, that many persons make mistakes in writing if the content of that which is being written is false, e. g., in the case of writers of anonymous scripts. One need only bring to mind defamatory petitions. Alterations due to exaggerated self-control are represented for the most part by corrections of loops, stronger definition of forms, and the like, and are easily differentiable as such from other corrections. Moreover, such a habit, if it also appears in the script subject to identification, provides a direct comparison standard. (Cf. here also Schneickert, "The Graphological Judgment of Corrections in Handwriting," Arch. f. Krim., Vol 113, page 89 f.) All these diverse types of mistakes justify the monition to approach the evaluation of corrections only with the greatest circumspection and care; to moreover approach similarly the discernibility of the incomplete erasure.

It is clear how the corrections which are important in comparison have originated. In most cases the forger does not know that he has given himself away or how this has occurred, or how it can be recognized that the undisguised manuscript is at hand. It

is this very ignorance which affords the most opportunities for the comparison of handwriting. However, it is not infrequently the case that the disguiser notices that he has reverted to his true handwriting strokes; likewise, it is not infrequent that the copier becomes aware for the same reason that the imitation of the foreign strokes has not succeeded, or that he at least has a presentiment that this could give him away. Then he will conceivably attempt to erase the forms thus arising, and he does this usually by striking out or scratching out. But not always does this erasing become completely effectuated: It may be that the cancelling line does not fully cover that which is written beneath; it may be that the erasure does not fully blot out the undesired letter or the like. If it is now possible to still recognize or to reconstruct the forms or strokes which were formerly present, then we have before us the true hand of the forger. Of course the latter is usually manifest only in a word or in a few letters, perhaps only in remainders of letters; nevertheless, be they ever so incomprehensible, they make possible a direct comparison with the script of the suspect, without it being necessary to skim off, so to speak, the alterations effected by the falsification. Of course invariably the main difficulty is that of still being able to recognize with some certainty the true script, i. e., that of removing the superimposed writing, as in the case of a palimpsest, as it were, without destroying or damaging the writing which lies thereunder. Sometimes of help to us here is cleverly-lighted photography, as well as the employment of infrared photography or of chemical means. (Used by the Federal criminal court for this purpose in many cases, above all in the case of pencil scripts, is ultrasonics, which shakes off, so to speak, the upper particles of

graphite. Here we cannot go into more detail, above all with respect to the prerequisites in the presence of which this process is potentially successful.) However, not rarely it is possible to still recognize the writing which lies superimposed by means of a magnifying glass or even with the naked eye. Then, for example, we might see under the cancellation a specially-formed commencing stroke before a capital letter, or a part of a quite singular loop, enabling us to examine whether such forms are characteristic of the suspected script. Or we might still recognize strongly right-trending strokes in a factual script, in which letter the right-trending stroke is otherwise quite restrained. Or we might recognize other similar executions of movement which are otherwise suppressed. Or one might see rounded curves in an otherwise straight-line and angular falsification, or in the copying of such a script. From all the foregoing we can draw conclusions on the natural hand of the forger. Even if we are only able to recognize another handwriting system, we have at least advanced a short step.

Against the process of permitting the execution of the method to begin with the seeking-out of faux pas the objection might perhaps be raised that such is worthwhile and potentially successful only in the case of comprehensive factual scripts. This objection contains a correct nucleus; however, to the foregoing extent it is nevertheless incorrect, even though it at first appears correct. According to our experiences, it at times occurs that even in the insertion of only a few letters or figures in a genuine script the forger overlooks the fact that he should not simply insert his own handwriting. Thus, under certain circumstances, even in the case of forgeries of such limited extent, we suddenly find a form of the true hand of the forger. Thus, not even here is

the forger secure against reversion to his natural hand. Smaller faux pas escape the trained eye of even the most competent handwriting comparer; suppressed movements, however, do not escape his eye. In the case of forgeries of lesser extents corrections, which can be evaluated, are likewise to be found. The afore-mentioned objection is only correct in that the potential with respect to success of this process is the greater, the more comprehensive the factual script. We have already discussed in detail those places in the piece of writing in which corrections are most easily found; therefore, we might here make reference to that discussion. However, not only the place but also the frequency of faux pas is in the case of each individual falsifier so diverse, and in the case of very many, so considerable, that one should aim at commencing the actual process of comparison with this examination of faux pas -- in the case of any factual script, be it of the most incomprehensive extent.

However, not only should the comparing handwriting expert begin his analysis with this examination, he should also undertake this examination repeatedly; then, after the execution of the comparison of characteristics, it should be repeated once again. If, after further execution of our method, one has recognized the vital form of the suspect's script and eventually comprehends its individual characteristics from this point, one will make the often-astonishing observation in the examination of the agreement between the total impression and individual strokes and forms that there where such agreements occur entire parts of the script reveal themselves to the eye of the examiner -- parts which certainly can be diagnosed as such faux pas. Under certain circumstances, this then

leads to the detection of the agreement of other script peculiarities to which attention has previously not been given. In those cases in which several agreements are to be found in the same word series or in a greater succession of handwriting signs these places should invariably be examined to determine whether they might represent as a totality a reversion to the true hand of the forger. All effort should be made to detect such places. One should constantly bear in mind that in such an affirmative case one has before one the natural hand of the forger; that this increases to a much higher degree the possibility and the certainty of the decision with respect to identity than does the detection of perhaps a greater quantity of -- but perhaps not entirely indicative -- individual agreements.

2. Vital Form and Rhythm in the Scripts to Be Compared

The detection of faux pas makes it possible for us in most cases -- at least in individual pieces -- to recognize or to get an idea of something of the vital form and the total condition of the unfalsified script of the perpetrator. Often this would otherwise be impossible or scarcely possible. In spite of this, in the further execution of our method we recommend proceeding from the factual script to the examination of the script subject to identification, beginning with the least influenced, i. e., unaffectedly-written, writings of the suspect. For if one wishes a clear perception with respect to the total impression of the handwritings to be compared, this will be more quickly and readily possible in the case of a suspected script which lies before one in an unfalsified, true state.

We have already represented in the justification of our method the reason why we place such great value on the vital form

of the handwritings to be compared. It is a question -- once again summarizing briefly -- of the individual comparisons only being a means to an end, viz., that of recognizing the persons of the forger and of the suspect which lie concealed behind the falsification and the script of the suspect, in order to be able to decide whether one deals with one and the same person. The reasons why we proceed from the start from the total impression and do not first seek such in the sum of individual finds are the following: (1) the comprehension of the total impression provides a clue for further analysis; (2) most important, individual characteristics can only be comprehended and understood in their significance in relation to the whole, and the evaluation of such characteristics is only possible in connection with the whole. The statement of Reiss, viz., every stroke and every individual sign receives its exact significance only from the entire writing picture, holds true not only for analytical, but also for comparative, graphology.

Hereby, the following question is of course raised: Is it still possible to still recognize the original vital form of the natural script of the forger and, with that, his individuality, from a handwriting strongly altered by intentional disguise or assimilation of another handwriting, as is often manifest in the factual script? Must we here resign ourselves, at least in those cases in which the seeking-out of reversions has had little or no success and the factual script gives the impression of very extensive artificiality and, with that, a certain inanimateness, or in such cases in which the copying has led to a very extensive assimilation of the foreign script? At first glance, one might think that this must be so; but indeed, by and large, we believe that we can answer

this question in the negative. In accordance with our experiences, the essence of the forger is still manifest to an astonishingly high degree in the total impression of the entire factual script with all its alterations and distortions. The reason herefor can only be the following: Even in the vital form of a manuscript the script strokes and series of movements which originate from the deeper-lying strata are so decisive for the formation of a handwriting -- they stamp their essence to such an extent on the handwriting -- that the actual "life" of the script remains perceptible under the distortions of the falsification, even though a part of its animateness is of course removed by the activity of the falsifier. With respect to this question, it might still be stressed that in doubtful cases in which it is questionable as to which of several persons is the perpetrator, the examination of the total impression will invariably be decisive and must be -- above all in those cases in which the individual characteristics in part speak for, in part speak against, the authorship of the one or the other.

What does the admonition to proceed from the vital form of the handwritings to be compared signify for the practice? What is meant by "vital form" in the first place? To be advanced for the elucidation of what is meant by the latter concept is the clear delineation of Knobloch (Die Lebensgestalt der Handschrift [Vital Form in Handwriting], 1950, page 8) which indeed expresses most briefly and pregnantly the state of the matter:

"If one describes the gait of a person as unsteady, the glance as wary, the sound of the voice as timorous, one simultaneously designates something psychical which is animate in gait, glance, and manner of speaking. Handwriting can likewise be

unsteady, warm, and timorous, thus manifesting itself as the expression of psychical conditions. This presumes of course that the handwriting is observed as something animate -- an organism, an essence, a vital form. The individual features of this vital form, e. g., unsteadiness, warmth, timorousness, plainness, thoroughness, clarity, flowingness, impulsiveness, "drive," weakness, pithiness, and the like, are called characters of impression or physiognomical aspects."

(The expression "vital form" perhaps sounds somewhat romantic; however, in reality it designates a very concrete and real factual condition. It deals with the comprehension of that in the script which is expressive of the actual individual life of the writer. The term "total impression" or a similar expression would not completely cover what is here meant.)

In the case of the comparison of handwriting, it might be supplementarily added that here it is not only a question of psychical aspects, but that the purely biological which is manifest in handwriting in a physiological-movement sense, for example, also belongs to the vital form of handscript.

Thus, with respect to this examination of the factual script and the script subject to identification, one might proceed from such viewpoints of the most general type.

In this connection, diverse other questions could also be raised. Thus, one could attempt to here draw upon the viewpoints used by Klages in his theory of form level -- of course not for the purpose of the classification of handwritings in accordance with viewpoints of value, which play no role in the comparison, but

rather for the determination of primordial physiognomical factual situations and for their use in the identification process. Here Klages evaluates handwritings in accordance with their abundance of animateness, their peculiarity and originality. Now, unfortunately, it is this very deepest stratum of the writer and handwriting, i. e., the abundance of vital expression, of originality, and of peculiarity, which can be the least directly inferred from the factual script, since even this will always be a "manufactured article," to use the expression of Klages. We shall only be able to directly comprehend the form level of the forger's handwriting as a whole in those cases in which either the factual script is deformed to a great extent or the true handwriting of the forger is extensively reconstructable. In any case we are further helped, under certain circumstances, by the comprehension and employment of the form level in the script subject to identification.

There is more possibility of success in comprehending from another viewpoint the vital expressions which are manifest in such a script, if we raise for ourselves the question as to the state of the force from which these originate, i. e., whether in this case it be a question of a vitally-strong or a vitally-weak writer. (Vitally-strong handwriting: Figure II; vitally-weak: Figure III, upper left.) This can be easily detected in the script subject to identification; it is also for the most part still recognizable in the factual script. It is not so, as it might appear, that the traces of the strong vitality of a forger are completely extinguished by the artificiality of the falsification. On the contrary, according to our experiences, these traces again and again come to light under the cover of the disguise or copying. A writer with pronounced vitality, as has already been indicated in the discussion of the

psychology of the forger, will succeed only with difficulty or not at all in permanently suppressing his elan in disguising or copying. Forgeries with powerful, animate strokes are indeed not so rare as might be supposed. Likewise in the case of copying, flowingness will betray the vitally-strong forger, while faltering timorousness will betray the vitally-weak forger. What is understood by vitality? Carl Gross, who investigated most thoroughly this phenomenon in his short work Vitalitaet und Handschrift [Vitality and Handwriting], defines this term as the more or less great force by means of which the vital functions proceed, along with the more or less high degree of undisturbance of their course. Thus, above all it depends on the force of the inner impulse, the strength of its control, and the undisturbed aspect of its effect. This is graphically expressed principally by a relatively rapid, uniform, large, broad, and heavily-impressed writing movement and a taut execution of stroke. These are thus characteristics which must not of necessity be unconditionally and altogether suppressed by the artificiality of the falsification. If these characteristics are to be found in the script subject to identification, if they are still to be found in the falsification, then in the case of both one can conclude a writer who conforms to this basic type of personality. Of course this does not yet attest personal identity; however, it can provide therefor a quite considerable clue the rightness of which must be confirmed or refuted by the final analysis.

One must be more precautions in concluding from a vitally-weak suspected script identity with a factual script in the case of which latter corresponding weak strokes appear. For the

characteristics of vital weakness are lacking dynamics of the course of movement, partial curtailment of the script, weak strokes, wanting or disturbed rhythm, slight expansion of the script, stroke disturbances, and the like. However, just such characteristics could also have been caused, under certain circumstances, by the falsification, and it will often not be an easy matter to decide which of these phenomena are genuine, so to speak, and which are conditioned by falsification.

With respect to vital aspects, the scripts to be compared can also be examined in another sense. For example, we can investigate whether the handwriting appears animate or inanimate; whether it gives an obdurate, definitive, "one-track" impression, or a moving, flexible, and manifold impression. Here it is a question of the examination of variation possibilities and alteration capability in a handscript. However, the answer to this question can only be a provisional one; its final, valid answer must remain to be supplied by the results of the analysis of characteristics. A full understanding of this problem will arise when we have obtained a clear perception with respect to the role of the alternation of characteristic and variation possibilities, which we shall later discuss more detailedly. For the purpose of providing a provisional elucidation as to of what it is here a question, the following might briefly be noted. As is known, there are many persons who write quite diversely, each in accordance with the manner in which they make notes for their own information, or the manner in which they execute a piece of writing intended for an addressee whom they consider important for some reason, e. g., communications to a patron, an employer, or "to women, the highly-esteemed, or the otherwise superior," to use the words of Wilhelm

Busch, or strongly-responsive and sensitive persons may write quite diversely, each in accordance with his momentary mood. From the start, all these persons will manifest a considerable breadth of variation in their handwriting. Further, there are also many writers who strongly alternate with respect to their individual handwriting characteristics, in accordance with degree and frequency. Again, others remain therein very consistent. Thus, for example, one person may invariably write calmly, employing in all aspects his long-line, sharply-angular writing. The first-mentioned handwritings give an animate impression; the others give a more or less inanimate impression. Or one writer may produce an abundance of diverse forms, e. g., he may have for a series of letters two or more different types of writing; another writer may invariably use only the same forms. This abundance or paucity of forms attests a difference in the animateness of a handwriting. Finally, a so-called mixed script, in which numerous German-style letters are to be found along with Latin-style, or vice versa, will perhaps give a no more animate, but at least more multifarious, impression than such a script in which one and the same writing system is consistently maintained throughout.

The expressions of individual "life" will be manifest quite diversely within a manuscript -- even in a manuscript altered through forgery -- each in accordance with which of the various psychological types (into which C. G. Jung divides human beings) the writer represents. According to Jung, there are the introverted type and the extraverted type, each in accordance with whether the psychical attitude is directed more toward the self, the subject, or toward the environment, the object. Now, as is always the case,

there are no pure representatives of such types; rather there is only a preponderance of the one or the other direction of attitude. The more pronounced this is, the easier is the classification into type. In this connection, it might be stressed that it is here not only a question of conscious attitude toward the world or to the self; it is also a question of unconscious impulses, emotions, feelings, reactions. (Whether this division agrees with or overlaps that of the Kretschmer types, and the extent to which this might occur cannot be discussed here in more detail.) These diverse attitudes can usually be rather readily established in a handwriting (cf. A. Teillard, loc. cit., the chapter "Type of Attitude"). Under certain circumstances, they also influence the type of forgery. The differences will be graphically manifest in accordance with the following examples. The extravert, who has the tendency of directing his interests outward toward the world and other people rather than inward toward himself, and who loves company, will in his handwriting likewise tend toward increased outward movement, i. e., toward expansion, perhaps toward large letters and rightward-trending script, as well as toward uniformity. He will perhaps employ broad, swinging festoons in his script. On the other hand, the introvert, whose interests are directed inward, who shuns new experiences and is often shy and rather awkward, and who appears little adaptable and sociable, will produce a smaller, more concentrated script which is often inhibited in movement, leftward-trending, narrow, and angular, and which in general takes up less space. In most cases these handwriting peculiarities will still be determinable even under the facade of disguise or in the case of copying. That this renders no difficulties as far as the script subject to identification is concerned is self-evident. As always, likewise

here falsification characteristics must be skimmed off, so to speak, and above all the consequences of stiffening must be considered, so that an introvert will not be suspected in every factual script. Indeed, the majority of forgers will belong to the extraverted type, the enterprising type. To be found among the latter will also be the unconcerned forgers, but also the energetic and the cautious. To be found more among the other type will be the more stealthy and precautions, but also the inhibited forger -- those who will be expected to have dammed-up and repressed tendencies.

We shall desist from going into further divisions of types. The gist of the matter is not how one comprehends the "life" and the totality of a handwriting, but that one merely comprehend it.

Nevertheless, what is now the situation, if in the individual case we are no longer successful in completely comprehending in the factual script the vital form of the forger's hand and, with that, the vital form of the perpetrator's hand?

Then we should have to restrict ourselves, so to speak, to individual vital expressions of the manuscript -- expressions which must of necessity be manifest in every script written in free hand, be the script ever so deformed as far as form is concerned, viz., to the pulsating rhythm of a script. In general to be understood thereby in handwriting is the relationship between writing movement and pause, or, as expressed by Heiss, "that characteristically-swinging flow which is repeated in its swinging movements and which for all that does not exclude irregularities and unevennesses" (loc. cit., page 197). Thereby appearing less important to us for the purpose of the comparison of handwriting is the so-called "basic

rhythm," which plays a great role in modern graphology, than is the rhythm of movement, and, for that matter, also the rhythm of pressure, of space and form. Certainly the comprehension of the basic rhythm of a person would render a secure -- perhaps the most secure -- standard for judging for or against the personal identity of perpetrator and suspect, but graphology does not have a clear perception as to the exact place in which such rhythm appears in the script. Moreover, in all cases this rhythm is very difficultly comprehended, without doubt and unambiguously. This rhythm could be perhaps sought in the script in the alternation of inhibition and free movement, corresponding to inhalation and exhalation in the case of the organism. However, the periodic alternation of inhibition and free movement is often scarcely in evidence in a specific handwriting. Others believe that it is to be found elsewhere, as, for example, Roda Wieser in her investigation of the scripts of criminals in regard to the elasticity of movement of stroke. However, this criterion would in turn be scarcely utilizable in the comparison of handwriting, since this elasticity regularly suffers the most serious degree through the artificiality of the production, which we shall later bring up again. Pophal (Rhythmus und Handschrift [Rhythm and handwriting] in a general study, 1949, page 88 f.) differentiates between rhythm of movement, of form, and of mass distribution, quite in correspondence with the division brought forward by Heiss. The latter designates a handwriting as rhythmical "if the formation and flow of movement of the script interpenetrate and fuse, if forms develop from the flow of movement, and the rendering of form finds its way into the flow of movement." Thus, both these graphologists -- leaders in the modern science of interpretation -- apparently view basic rhythm as an

accord of the rhythm of movement, form, and mass distribution. We ourselves have no incentive not to follow their views in this matter. A further reason herefor, especially in the case of the comparison of handwriting, lies in the fact that it appears quite questionable to us whether, as a rule, basic rhythm is at all destroyed or altered to such extent by an artificial alteration of handwriting in disguising or copying that such rhythm becomes unutilizable for the comparison process. This question requires a special investigation, which has not yet been undertaken, but it is appropriate to affirm the question. In discussing the stroke picture, we once again come back to this, insofar as one seeks basic rhythm in the strokes. At any rate, one thing must be borne in mind. Unconsciously, a person inserts in every true expressive movement his entire personality -- and this also occurs in handwriting. However, in this sense a handwriting which has originated through the imitation of a freely-invented model, or one which has originated through the choice of a model for the purpose of creating a facsimile, is no longer a real and genuine expressive phenomenon, viewed in its entirety. Rather, it still represents incompletely the deepest and most animate depths of the personality of the writer.

On the other hand, we shall still have to be able to perceive in it individual vital expressions of the personality of the writer, for without such the free-hand production of even the most artificial manuscript would be inconceivable. However, such partial vital expressions in handwriting are principally represented in the manner in which the writer carries out his writing movements, how he distributes the writing space, and how he stamps his forms, and how, thereby, the singularities of this course of movement, this distribution, and this stamping relate to each other, and how they alternate periodically.

In the comparison process, one should above all grasp and retain these phenomena which are basic in every handwriting. They will serve us principally as clues which will enable us to proceed further, step by step, in the process of the identification procedure. Therefore, in the following delineation of the individual analysis special value will again and again be placed on the comparison of these individual rhythms. In accordance with the foregoing, we shall find such rhythmical phenomena above all in movement, pressure, position, size, breadth, and distribution of space. Further, we shall discuss each of them in its place. Those forces which produce such phenomena are never completely stifled, even in the case of the most strongly-altered form in the case of falsification. Under certain circumstances, we can perceive them in individual movement strokes, economy of space, words, letters, even letter constituents. (See Note below) A rhythm of form in the sense that there exists harmony between form-stamp and movement will of course scarcely be found in forged writings. ([Note] The assertion brought forward here, viz., that the natural rhythm of handwriting is to a great extent preserved even in the case of alterations through forgeries, has in the meantime been clearly confirmed by an (unpublished) investigation which was undertaken after the completion of this book by Elfriede Schoettler, at my instigation, in the seminary of the Psychological Institute in Freiburg. Thereby, it was also found that rhythm is also often altered in the manner of an image reflected in a mirror, in that, for example, a handwriting which becomes increasingly rightward-trending now becomes increasingly leftward-trending in the artificial alteration of place, etc.

In addition, it has further been brought out that intentional alterations of handwriting usually alter characteristics more strongly than do alterations caused by stiffening, and that in the case of disguises a continuance and coarsening often occurs in the peculiarities of the natural script, e. g., in alterations of direction. Both these above-mentioned occurrences should perhaps be added to the chapters concerned.

Of course the investigation was based in part on private writing material, for the forensic material which was available was not as comprehensive as might have been wished for the flawless scientific evaluation of the results obtained.

The continuation of such investigations on the basis of comprehensive material would be quite welcome and would certainly prove rewarding.)

3. The Stroke: Tension and Pressure

Before we shall be able to pursue in detail the writing movement, we shall have to have a clear perception in regard to another aspect.

Every writing is produced by the drawing of lines. Thus, the stroke can be designated that primordial element of handwriting. Therefore, before we pursue the drawing of lines called forth by the writing movement, we must first observe the possible conditions of such a stroke, above all, its tension and its pressure. We must find out what can be gained from this examination for the comparison of handwriting.

The stroke picture has been subjected to research by Pophal in detailed investigations, and in the main we are in agreement

with the results brought forward by him and which are of the greatest importance for graphology. As expressed by Pophal, the stroke is that constituent of handwriting which expresses the "psychical substance" which lies at the basis of handwriting, whereas the alterations of letter form and the writing movement which executes the latter reveal to us the individual formative tendencies and the personal manner of the writing movements of the originator of the script. (Cf. here above all Das Strichbild [The Stroke Picture], 1950.) That under these circumstances giving attention to the condition of stroke is also of importance for the comparison of handwriting is quite obvious. However, such comparison unfortunately encounters not inconsiderable difficulties. It should first of all be taken into consideration that, as is already known, every falsification, be it a copying or a disguising, as a rule demands and compels a slower tempo of production than does natural writing; and that this can exert influence on the tension of stroke. Thus, the following question is at once raised: Does the artificiality of the production invariably alter the stroke, as such? That this occurs must be accepted as factual. Nevertheless, it would not be possible to construct a method for the comparison of handwriting on a comparison of strokes -- as tempting as this idea may appear, i. e., that of establishing such comparison of handwriting on the primordial element of handwriting. What direction is taken by this alteration of stroke induced by falsification? Through a drawing of strokes in the production of artificial scripts, only in quite rare cases will a so-called dynamic stroke result (we follow here the terminology of Margret Harge, Die Schriftspannung [Tension in Handwriting], 1935), i. e., a stroke which appears strong and animate. On the other hand, as a rule an adynamic, more

or less inanimate, weak, at least inhibited stroke will find its way at a decreased tempo into the writing picture -- a stroke which will have a stiff, dammed-up appearance. Pophal even goes as far as to assume that slower or finer writing -- in accordance with the task at hand -- has a detrimental affect on stroke structure, and that arbitrary transformations invariably alter the latter. Therefrom he draws the conclusion that in investigations involving questions of identity the stroke picture can only be drawn upon in those cases in which a disguise of handwriting or a forgery are excluded. This would then apply to the entire forensic identification of handwriting. Would then the comparison of the conditions of strokes be of no value at all for our purposes? In accordance with our experiences, it is our opinion that one cannot go this far. With his analysis of the "inner stroke," which is carried out by means of the most-detailed methods, and in accordance with the results of which he divides strokes into homogeneous, granulated, and amorphous, Pophal may indeed be on the right track. On the other hand, the condition of stroke can still be turned to account, if one compares only the cruder differences in pressure, disturbances in the drawing of strokes, and the appearance of margins. In this way at least an elimination of personal identity in the case of a full inconsistency of these phenomena would still be attained, i. e., a negative finding. It should be pointed out a special investigation would be required for the question as to the extent some certainty might be here attainable. Nevertheless, for our purposes the following will suffice provisionally.

With respect to the condition of stroke, one usually differentiates between tension and pressure (Heiss, loc. cit., page 54 f.). A stroke is said to be tense when it is elastically flowing,

sure of direction, straight, definitive, animate, "vitality" drawn; a stroke is said to be untense when it manifests aspects contrary to the foregoing. Now of course in the comparison of handwriting one must have from the start a clear perception in regard to the fact that this tension suffers under every artificiality of the production of script; that sometimes this tension is even more or less lost. The "correct" imitation of a foreign script and the simultaneous maintenance, in the production of script, of the tension of stroke, which is otherwise habitual in the drawing of strokes, is extremely difficult and can be attained only approximately through practice of long duration. This is explained by the fact that a tense stroke can be attained only with a certain speed. However, the use of such speed brings with it the danger that the certainty of being able to accurately match the foreign forms is lost. It is not much different in the case of those who attempt to transform their true handwriting in such manner that it is not recognizable under this mask. To maintain in longer writings an effectively camouflaging style fluently, i. e., with a quite tense stroke, is only very difficultly possible, for an effective disguise must be carried out with some care, but without disturbing speed. Otherwise, one's own writing tendencies and writing forms would penetrate, thus endangering the camouflage. To conclude, on the basis of a factual script manifesting little or no tension, a corresponding script on the part of suspects would thus not be called for in most cases. Inversely, in those cases in which the script subject to identification manifests as untense a stroke as the factual script one must carefully examine whether this can be considered a sign of identity and whether the inhibited or relaxed stroke in the factual script might not have resulted from the diminution of tension due to

falsification. The tendency toward tenseness on the part of a forger, which usually finds its basis in a strong vitality or the like, will more usually be expressed in characteristics other than speed and tension, e. g., in increased productiveness, be it of pressure, expansion of script, rightward-trending letters, or wide-sweeping strokes. This also would require a special investigation. However, this much appears certain to us; tension, as such, is so strongly altered in the disguising or copying of handwriting that it alone can scarcely provide a direct standard for comparison.

It is quite a different matter in the case of pressure, which from many viewpoints is quite suitable for comparison processes and can even be very important therefor. Here, one must always make an examination to ascertain whether one is confronted with an actual abrasive pressure or merely a stroke executed with a soft pen, which can easily assimilate pressure, whereas in reality it may only be a matter of a broader flow of ink, i. e., a stronger shading. But the appearance of pressure can also be traced to the indolent adherence of the pen of the writer to the surface of the paper, just as it can be traced to the so-called "doughy" execution of stroke. This can easily be detected by observing the reverse side of the paper, since in the case of strong pressure the pen penetrates the paper to such an extent that such is also visible here if it is not a question of very thick or strong paper. If genuine pressure is in evidence, the following should be given attention. It is of course true that many forgers tend to increase pressure, and in accordance with the above-discussed scales with respect to the ease and frequency of production, this alteration of pressure usually occurs on the left side, i. e., with respect to ease of production or frequency of occurrence. An adroit handwriting

copier will find it not too difficult to assimilate to a certain extent the pressure of the script copied. But this also has its limitations. Of course little difficulty is entailed in transforming strong pressure into weak pressure, or even vice versa. However, for one who is unaccustomed to this type of stroke, the production of a so-called "doughy" stroke, in the case of which ascending and descending stroke are of approximately equal thickness, is quite difficult. Unsuccessful attempts herein in matching the model chosen gives away quite readily the forgery and, under certain favorable circumstances, the forger himself, in the comparison process. It is not true that, as is sometimes maintained, every forgery is bound with an increase of pressure. In accordance with the experiences of the forensic practice, it has been brought out that many forgers, in addition to their habitually-used pressure, are subject to diminution of pressure -- perhaps from uneasiness or as a result of cautious concentration.

However, even if pressure, as such, is no longer suitable for the comparison process, the condition of stroke and the way in which it occurs through pressure can still reveal much to us, under favorable circumstances. By stronger magnification, above all by use of the magnifying lens, not infrequently it can still be recognized whether the tip of the pen has penetrated more with the left or right side in the movement of the pen on the paper, or whether both sides have penetrated equally. This is to be decided when the writer in question consequently carried out the one or the other manner of holding the pen, which according to our experiences unfortunately is frequently not the case, at least not to a pronounced extent. If here unambiguous differences between factual script and suspected script exist, one will have to be extremely

cautious with the establishment of identity. Thereby, it should not be left unmentioned that, as in the case of the entire formation of pressure, this characteristic can also be quite considerably influenced by a pen to which the writer is unaccustomed or by an altered manner of holding the pen. This occurs in many cases of disguised handwritings. Here also, special investigations would be necessary. (With respect to the manner of holding the pen in general and its influence, cf. W. Luthe, special publication from Graphologia [Graphology], supplement III to Schweizerische Ztschr. f. Psychologie und deren Anwendungen [Swiss Journal of Psychology and Its Applications], No 20. Cf. also his "Investigations on the Pressure of Grip," loc. cit. The results of all these investigations still appear to us not very certain or comprehensible.) Of course here also it must be taken into consideration that an artificial manner of holding the pen is difficultly maintained for a long period and entails the danger of constant reversions, to which special attention must be given in such cases. However, not only the question as to which of the margins is especially stressed is of importance for the comparison process. Also of importance -- and to a much higher degree -- is the marginal condition of stroke, and the question as to whether such belongs more to the so-called inner stroke or to its outer side. In the case of margins, one can often determine by inextensive magnification whether the margin is blunt, i. e., whether it is ununiform, wavy, zig-zag, mangled, ragged, as Pophal describes this type of margin, or whether it is relatively smooth and sharp. Certainly, also here the type of ink, of paper, of writing tool or its manner of being held is not without influence, but this is strongly overestimated for the most part.

Pophal gives relatively little importance to the influence of pen and ink on the condition of stroke, and this is in agreement with our experiences. If one can more or less conclude such influences, and this is usually possible, then the condition of the margin, as an exclusively physiologically-conditioned characteristic, is of great indicative value.

Also very important for the comparison of handwriting is the consideration of the so-called displacement of pressure which can be included among the disturbances of pressure. As a rule or often, in not a few scripts pressure is evidenced in the connecting strokes of letters, rather than in downstrokes which form the skeletal structure, so to speak, of handwriting. At times stressed pressure is found in ascending strokes, especially in lower loops. In such a case the first-drawn descending stroke is usually weak in pressure and fine. Since such displacements of pressure are almost always bound with a special manner of holding the pen or result from such manner, the influence of such intentional alteration of the manner of holding the pen should be subjected to a particularly exacting examination. The use of a roundhand or similar pen also results in displacements of pressure. However, these are so singular that their cause is easily determined. Leaving such influences out of consideration, one must of course be somewhat precautions in the evaluation of displacements of pressure which are in accord. Such characteristics in the factual script can also represent inhibitory characteristics, resulting from the general inhibition occurring in the unaccustomed activity of the forger. Thus, if such are to be found in the factual script but not in the script of the suspect, this of necessity does not indicate much against the identity of the writers, for it could be possible that

the writer of the factual script, in the connecting of his more or less newly-created letters, had inhibitions to overcome which could have expressed themselves in the damming-up of pressure in the connecting strokes.

As must constantly be repeated, the most certain means for diagnostication is the comparison of the rhythm of the factual script and the suspected script, to the extent that such rhythm can be clearly comprehended in the script, for such is the most profound and permanent vital expression that we can lay hands on, so to speak, in handwriting. It is a similar matter with the rhythm of pressure. There is also rhythm in pressure, and this from a twofold point of view. For one thing, it is expressed in the total distribution of pressure which extends over the entire script. When one observes a script from a greater distance, in the case of many pieces of writing it is made obvious that, for example, in the case of otherwise strong or medium strong pressure of the total script, individual word groups, or words, or letter series have again and again been written more faintly; or that, inversely, in an otherwise weakly-impressed writing such places have again and again been strongly impressed. If this occurs in the factual script and the script subject to identification in like manner in approximately the same rhythm, this then represents a quite strong clue as to the identity of the writer. But an unrhythmical interchange of the same type -- an interchange which does not find its basis in a clandestine law, as it were -- can also attest thereto. The second manner in which such rhythm of pressure can occur is represented in its occurrence in the so-called inner pressure, i. e., the execution of pressure within the stroke. Of course here we must be more cautious in reaching a conclusion, because, as is said, the inner structure

of stroke is altered through the artificiality of the production of script. However, to be evaluated here also are the courser fluctuations of the intensity of pressure in the execution of stroke -- for the most part still perceptible to the naked eye -- and especially of the downstroke. Here there are quite diverse manners of the distribution of pressure, which are easily differentiated one from the other. In the case of the one descending stroke the pressure lies more toward the lower part of the line or toward the end of lower strokes, so that the stroke appears club-shaped. In the case of the other descending stroke, the pressure lies more in the center where, after becoming gradually stronger and then again weaker, it becomes a so-called swelled stroke. In the case of other writers it occurs in the upper part of the descending stroke, and the stroke runs downward, daggerlike or swordlike, or the pressure courses in the individual downstrokes now in the one manner, now in the other. Here also, as in the case of pressure and rhythm in general, it is a question of phenomena which can be traced to the depths of impulses, or of such as are physiologically-condition, i. e., of comparison characteristics of great value, and these phenomena are little affected by the artificiality of the production of script, in accordance with our experiences. In the case of such as are drawn with the pen, the determination of such rhythmical or unrhythmical fluctuations or alterations of the distribution of pressure within the stroke usually entail no difficulties. However, difficulties are often entailed in the case of pencil strokes, because here graphitic or other particles are for the most part uniformly distributed. Scarcely to be made are such determinations in the case of writings by means of the so-called ball-point pen, because here the ink flows nonuniformly and genuine pressure is hardly ever in evidence.

Finally to be pointed out is a phenomenon in handwriting which is perhaps less indicative for the interpretation of character (because it is here a question for the most part of only somatically-conditioned characteristics) but which is of the greatest importance for comparison for this very reason. This phenomenon is represented by the disturbances of strokes. These often permit differentiation between the stroke of two scripts and, with that, the scripts themselves, in quite unmistakable manner. The cause of such disturbances of strokes are often to be found in a nervous nature or in corporeal diseases, and such disturbances are often to be found as the phenomena of senility in the writings of aged persons. Practically speaking, it is impossible to artificially produce them in a credible manner, or it is at least extraordinarily difficult. To match them exactly in copying is virtually impossible, as is their suppression in the production of artificial scripts. In the case of falsifications of wills, their unsuccessful reproduction points with certainty to forgery. In the case of falsified wills special attention should be given the detection of such phenomena, because in just such cases their production again and again becomes necessary. However, in most cases attempts at such reproduction fail, or these phenomena are overlooked entirely by the forger. Through the extraordinary difficulty entailed in their production, copying, or suppression, they belong, as principally biologically-conditioned characteristics, to the most important and most indicative characteristics of the entire process of the comparison of handwriting. The importance of their consideration, detection, and evaluation cannot often enough be impressed upon the handwriting expert.

They are recognized by means of the following. When one places under the microscope a "healthy" stroke, one finds in it a

rather continuous, constant, and cohesive execution of movement. In the case of many strokes this continuous connection repeatedly or only occasionally will be interrupted by a more or less small, often only minute, interval. This can occur in such manner that only one or several intervals are in evidence, but also in such manner that the stroke dissolves into small dots for a shorter or longer interval. Or the stroke can be blurred at intervals; or the execution of stroke appears brittle or shaky; or there are sudden appearances of deflections of direction, often only for minute intervals.

However, here another warning must be added. Whereas otherwise the condition of the writing material does not appear to us to be of such decisive significance, in accordance with our experiences in the comparison of handwriting, as that which at present is often ascribed to it in general graphology -- a theme which we shall return to later -- the possibility of the influences exerted by material is always to be given consideration in the case of such disturbances of stroke. Thusly, many a blurring could easily have come from a scratchy pen; many a dot-shaped dissolution of stroke could be traced to the condition of the paper or to the lubricity of the latter. In such cases it would of course not be a question of true disturbances of stroke. By means of carefully-conducted examinations as to whether such material could have caused this phenomenon, the difference will for the most part be readily established, and sufficient experience renders a certain certainty of judgment in these questions. Often of help here are photographic enlargements in the largest possible format.

In general, the condition of stroke and the rhythm of pressure often become clearer by means of such enlargement, and

where is a prospect of attaining something hereby the attempt should be made. Even blurred scripts can sometimes be made clearer by photographing them; this can also be accomplished in those cases in which only carbon copies of original documents are available. In all cases it is important that the expert give the photographer exact instructions as to what the former wishes to obtain.

4. The Execution of the Writing Movement

In the discussion of movement and formative forces and of the relationship between writing movement and formation we have seen the decisive importance for the forensic identification of handwriting characteristics in the factual script and the suspected script. Thus, in contrast to the stroke picture, the evaluation of which often appeared to us doubtful and uncertain, the most certain and most indicative arguments for or against the personal identity of perpetrator and suspect are to be found in general in the phenomena of the movement picture. This has long been known in graphology; unfortunately, the practice of the identification of handwriting has often taken little notice thereof. Thus, Crepieux-Jamin, in his here often-mentioned Grundlagen (German edition, page 65), cites a pertinent dictum from the year 1900 of the philosopher and graphologist Tarde: "The true graphologist bases his conclusions not on the static, but on the dynamic, manuscript; not on the static investigation of each individual handwriting stroke, but on the dynamic unity of relationship of that investigation, in which are reflected the impulse of the mind and the movement of the hand." For modern graphology, above all since the investigations of Heiss, proceeding initially from the writing movement has become self-evident. As is above indicated by the gradation of handwriting

characteristics, the excellent significance of the movement characteristic for the comparison of handwriting is principally manifest in that such is inherent in these characteristics, i. e., quite primordial inclinations, impulses, and tendencies are herein reflected. Therefore, such characteristics are only quite difficultly or not at all suppressible, producible, or transformable -- at least not for a long period and not without the danger of constant reversions. (It appears incomprehensible that Wittlich, in contrast to his otherwise correct statements, occasionally declares the characteristics of the distribution of space as more indicative than movement characteristics; loc. cit., page 171.)

In order to be able to comprehend to the fullest the phenomena of the writing movement, as well as, later those of the space and form picture, it will be best if from this point on in the execution of our method we proceed in such manner that we are able to observe the forger and the suspect in the act of writing, as it were, from the placing into position of the writing tool and the writing movements, passing from the filling in of space to the formation of letters and other script forms, then comparing with each other the findings made. This we can do by forming conclusions from the finished script and pursuing the execution of writing which forms the basis of the latter.

Every writer begins the act of writing by applying his pencil or pen to the paper before he begins drawing a stroke, and this process is repeated after every pause he makes in writing. The very type and manner in which this occurs is of the greatest importance for the comparison of handwriting. The ~~one~~ writer does this forcefully, the other hesitatingly; the one clumsily, the other

lightly and easily. Even this very taking up of the pen often leaves behind traces on the paper, which occasion the most diverse phenomena, each in accordance with the manner in which it is carried out. Thereby, as yet no handwriting characteristics or forms arise -- neither in the sense of the above precisely-detailed, extended concept of form. At best we could designate them preformations or rudiments of forms, since the application or taking up of the pen occurs before the actual act of writing. It is astounding how manifold the phenomenal pictures of such preformations can be, and thus can be explained their great importance for the comparison of handwriting. Many of them of course are only explicable from a physiological-movement standpoint, being scarcely interpretable from a direct characterological standpoint, viz., those which can be traced simply to the manner of the grip of the hand or to the functioning of the muscles employed in the act of writing.

To the extent that they can be explained from a psychological viewpoint, it is principally a question of two types of traces of beginnings. The one, the so-called adjustment type in the literal sense, is the result of a hesitation in the commencement of the writing stroke. Apparently, no one is capable of immediately writing with no advance preparation of any kind; on the contrary, one must pause for a moment and orient oneself to the writing surface before one begins fixating ones thoughts. (According to Saudek, loc. cit., page 194 f., who treats of this adjustment, this hesitating has been cinematographically indicated.) Such orientations, above all when they are of longer duration than is here unconditionally necessary, almost invariably are realized in the form of small dots or small loops on the writing surface.

Under very strong magnification the small dots will occasionally manifest the form of superimposed strokes, or of small circles, i. e., an irresolute to-and-fro, as it were, a "marking time," as Saudek calls it -- a hesitating before the actual commencement of the writing act. This necessity of overcoming an inner resistance can occasionally be an indication of the artificiality of the production of handwriting. However, should such phenomena also be found in corresponding manner in the script subject to identification and the factual script, then considerable suspicion is provoked that it is a question of the same writer who may otherwise hesitate in life at commencing a thing. Hereby, it should be emphatically stressed not only that such adjustments are found at the beginnings of words, but that they can occur in each new beginning of a writing movement, as well as within a word.

However, most of the traces of beginnings that we find are not actual adjustments in this sense, i. e., not real characteristics of hesitation, but are such as directly arise from the application of the pencil or pen. For the most part, these have the form of small hooks. In contrast to the hesitant adjustments described by Saudek, not infrequently they can be traced to a hastiness of commencement due to a precipitation of starting in the impulse to execute a writing movement, or from a pure inadroitness in the manner of drawing strokes. However, in most cases these small hooks are simply "runs" to upstrokes or the commencing strokes of the next letters. (Pophal calls them movement suggestions.) Usually, the beginning direction of these small hooks aligns in accordance with the course, above all the direction, of this first movement stroke. If the here-commencing writing movement changes into an arched stroke, if it is thus a question of a so-called "arcade,"

then the small hooks, which are hollowed from the lower right downward, will run into the upstroke in the direction leftward and upward. On the other hand, if the commenced writing movement changes into a "festoon," i. e., into a deeply indented curve, then the slope hereto will come from above, usually above from the right, and then below and around -- it will form a leftward-curving hook which is open at the top above the commencing stroke. (Examples: see the lower handwriting specimen in Figure II, text lines 2 to 4 ("mir," "wuenschte," "ich," "mir"); tendency toward the other type of commencing is illustrated in Figure VI, above.) Thus, it is here a question of handwriting phenomena which have a direct connection with the movement stroke and which are the preparation, so to speak, of the latter. Therefore, they can and must be explained from the total of the handwriting movements. The agreement of such preformations in the factual script and the script subject to identification thus manifests a corresponding formation of movement strokes. Its lack in one of them, if the same type of connection prevails in both scripts, is a considerable negative indication that perpetrator and suspect are the same person. If such commencing hooks appear in both scripts, then it still depends on whether in all their details they are in correspondence, or whether they have another phenomenal form. For, in addition to the afore-mentioned diversities, they can be different in many other respects. They can be thick or thin, minute and only perceptible with the microscope, or relatively large and conspicuous, fine or crude; they can occur further upward or downward, etc. It is here especially important to range them in all cases in accordance with the greater interconnection of movement strokes, since -- to the extent that they originated from pure physiological

movement -- they can be deduced from certain writing impulses or specific writing habits of the perpetrator or suspect, as has already been indicated with respect to the form of connection. Moreover, most of these preformations will correspond to the totality of movement in accordance with direction, intensity, or in some other manner. Thus, for example, those who draw up their commencing hooks far from below will also otherwise tend toward strokes from below upward; those who produce strongly-impressed dots or hooks will also otherwise tend toward considerable pressure; and so on. It should once again be emphasized that to be found among these handwriting phenomena are a great part of those characteristics which we have above designated identification characteristics in a special sense, i. e., such as can be traced to the deepest strata of the personality or to the "biology" of the latter; and that, in correspondence with our fifth basic principle they are of quite special indicative value for us in the forensic identification of handwriting.

In anticipation, we should here go into corresponding phenomena with respect to the recommencing movements of the writing tool -- phenomena which systematically actually belong at the conclusion of the discussion of the execution of movement, but which are more suitable here in this connection, because it is a question of quite analogous characteristics. Just as in the case of the application of the pen or pencil, similar stroke traces or rudiments of form occur in recommencements -- here perhaps even more frequently than in the case of the commencement of writing movements. They also -- each in accordance with the general writing tendency -- represent in the cancellations of words small and the smallest deeply-indented or curved arches. (Examples ~~in~~ the text of the will in

Figure II ("Edwin," "Anna," "Seite," "Erben.") If they occur as so-called back-stroke hooks, above all in the case of rightward-trending handwriting, then they are an indication of the intensity and speed of the writing movement which lets fly with a jerk, so to speak, in the case of the last cancellation of a word. However, backward and leftward-trending recommencements can indicate a sudden braking of the rightward trending, which will also be manifest in the remaining writing movements. One need only bring to mind the backward and leftward-trending U-bends (e. g., Figure II). Or there can be so-called reversions caused by excitement, which show that the writer was under the influence of affect. Of course in these cases one can scarcely judge whether they are only circumstantially-conditioned, as in the case of affect-influenced forgers, or whether they express a permanent peculiarity. Otherwise, all these recommencement traces, as do the commencement traces, have for the comparative judgment the great advantage that usually they have not arisen exclusively under the direct influence of the falsification, but rather often represent genuine characteristics. And it is this very circumstance which assures them their great indicative value for the forensic identification of handwriting. For the recommencement traces it is further to be stressed that they occur not only in a horizontal direction in the case of cross-strokes, but just as often in a vertical direction in the case of downstrokes, viz., in such which end as downstrokes below without further connection, as in the case of the long German-style "s," the "f" written without loops, the "p," or the "q." Here they can be found in club-shaped, as well as in sharp, downstrokes; in such they occur more frequently. They will usually manifest themselves as small hooks, either to the left or the right of the downstroke. All this is of course to be given

exacting attention in the comparison process. They will also be connected with general writing tendencies, usually with rightward or leftward-trending script. They can likewise be formed in quite a diverse manner. If such small hooks on cross-strokes or down-strokes are wide-sweeping and sharp, the general character of the script will be in accordance thereto. Even if the situation is somewhat reversed, and they are course or limp, there will be accordance. They are also to be found in short letters on the downstroke, above all in the case of the so-called stop-stroke. If they are turned leftward and downward, they can lend the downstroke a somewhat claw-shaped appearance. Signs of hesitation are found less often in recommencements; they are then manifest as small dots at the end of cross-strokes and signify that something has not been given free play. But they can also be a sign of emphasis or also, as Saudek interprets it, a "resting on ones laurels." In any case, to the extent that they do not originate from the hesitancy of the artificial production, they will again and again be in accord with the general writing tendencies. It can then be said that these phenomena are purely physiologically-conditioned. That the recommencement traces have the same high indicative value for the comparison process as do the commencement traces is in need of no further elaboration, if both are in evidence -- the latter in accordance with the actual writing act -- if they have thereby escaped the attention of the forger; if, consciously, they are scarcely or not at all producible; and if they originate, to the extent that they are not falsification inhibitions, from the deep strata of the personality or from the physical peculiarities of the person of the writer. However, precaution is necessary in the examination from a twofold point of view. For one thing, such examination, in the literal sense, must be

undertaken on the most exacting basis under the microscope, since the presence of the foregoing, as such, as well as their finer formation, is decisive for the question of identity. Secondly, small hooks in recommencement, which only occur in the factual script, can be a consequence of the stiffening which occurs in every artificial production of manuscript.

We now return to the writing process to pursue it further. Upon the application of the pen or the pencil the first stroke is drawn -- the commencing stroke. Of course the formation of the latter is only theoretically separable from the traces of the initial application of the pen, since the one graduates imperceptibly into the other, and, as we have seen, the appearance of such application often depends also on the direction of the commencing stroke. Now, is this commencing stroke usually altered by the artificial writing employed in falsification? According to our experiences, this is not the case. If one were only to examine the direction of attention, the question would not permit of solution, for on the one hand the commencing stroke, as a constituent of the letter, is inconspicuous, while on the other it is conspicuous as the beginning of a word. Appearing as decisive to us here is the rule stressed at the end of our fourth basic principle, viz., that it is easier to completely alter comprehensive characteristics than it is to do this only partially -- a phenomenon which Georg Meyer had earlier pointed out. Here, this signifies that it is easier for the forger to completely suppress commencing strokes or to add missing commencing strokes in the natural script throughout, than it is to arbitrarily suppress, produce, or alter them individually. Above all, in accordance with our experiences, the alteration of commencing strokes, from a viewpoint of form or direction, appears very difficult, e. g., making deeply-indented

curves out of rounded curves, and vice versa, or making straight lines out of curved ones, and vice versa. This can be explained quite easily, for these differences can be traced to various-type movement impulses, whereas, in the case of the addition of, or the complete omission, of commencing strokes, it is a question of a conscious formation, and such invariably appears easiest to the forger. Moreover, the additions are easily revealed through the inorganic aspect of their connection with the body of the letter as a falsification product. In correspondence with the rules of the direction of attention, the forger is especially fond of suppressing the commencing strokes when they are conspicuous, e. g., when they have been drawn up from far below. But in just this case reversions are again virtually unavoidable and usually occur frequently. In general, this can be established as a fact in the case of commencing strokes: Their alteration, in accordance with form, direction, and length, is apparently not executable for a longer period. This makes of them characteristics to which the comparer must give special attention, self-evidently under consideration of the relative easiness of total suppression or addition.

Approximately the same as has been said of the commencing stroke, i. e., the first upstroke, applies to upstrokes in general. (Examples of contradictory upstrokes are illustrated in Figure V; note the "E," "B," and "r" of the two specimens.) They also tend to proceed "automatically," in contrast to downstrokes which form the skeletal structure of handwriting, i. e., fully eluding the knowledge and will of the writer and the forger, as well. Their production occurs in general below the threshold of the fully waking consciousness and therefore also outside the sphere of influence of the conscious will. We shall disregard the

connective strokes of short letters, which are usually also upstrokes, e. g., of loops, be they in the upper or lower zone. Here, special attention should be given fine fluctuations or deviations of direction in upward movement, not to mention the actual disturbances of stroke which have already been discussed. Concordances in such fine fluctuations are often more indicative than a series of outwardly-similar letter forms, and this not only in the case of copying, into which they creep as deviations from the handwriting strokes being copies, but also in the case of disguising, in which they cannot be suppressed. It is nevertheless here a question of uncertainties of movement which are usually physiologically-conditioned and which are neither noticed by the forger, nor can they be suppressed, altered, or intentionally produced in a credible manner by him. Upstrokes -- above all, their length -- are also decisive for the size and width of handwriting. This will be discussed later, since it also is of special importance for the comparison process. We have already discussed unnaturally-displaced pressure in the upstroke. Thus, those upstrokes which do not belong to the so-called connecting forms are of the greatest significance for the comparison process.

Before discussing these connecting forms, we should first observe the drawing of downstrokes. Downstrokes form the principal constituent of handwriting. A writing consisting only of downstrokes would still be readable if but difficultly; a writing consisting only of upstrokes would in no case be readable. Anyone can himself make this experiment. Even Klages has pointed out and stressed the fact that the downstroke is more subject to the attention of the forger and is easier producible than is the upstroke

or the secondary constituents of letters. And yet, in accordance with our experiences, their alteration cannot be so easy, at least not without simultaneous alteration of the entire connecting form. For example, a writer who is accustomed to drawing his downstrokes in such manner that their upper end tends forward, so that they bulge rearward, will scarcely ever alter them in falsification in such manner that they are now bulged forward, just as little as vice versa. Further, if in the natural script the interval of downstrokes in small letters is lesser or greater on the line than above at the beginning of the downstroke, then this is also the case, in accordance with our observations, in disguised scripts or those falsified by means of copying. If in the downstrokes outward bends of direction are in evidence, e. g., in the manner of serpentine lines or fluctuations of direction -- phenomena which are easily detected in long lines -- this will certainly also occur in the falsified handwriting, if only as faux pas. Thus, downstrokes appear less indicative to us only when they are observed from the viewpoint of their function as letter form -- but not when attention is given to their details, especially to the direction of execution of stroke and above all to the deflections and fluctuations of direction. Nevertheless, these must have originated from writing impulses traceable to deeper-lying depths or from fastly-ingrained writing habits. For this reason they are less conspicuous to the forger and they cannot be directly and arbitrarily altered by him. If such an alteration, e. g., another flexure of downstroke, occurs, then such is more easily executable than a radical alteration, as in individual, specific downstrokes. However, frequent faux pas can be reckoned with certainty. Thus, downstrokes also offer a fruitful field for the processing of the comparer.

In which manner can these downstrokes be bound with each other? Herewith we have come to the question of the connective form which has constantly played -- and justifiably -- a great role in analytical graphology.

Everyone who has taken even a cursory interest in graphology knows that there are three actual connective forms, viz., the angle, the arcade, the festoon. (Angular writing: Figure II; "festooned" writing: Figure IV, below, and Figure V, above; arcades: Figure III, right; indication of thinline writing: Figure I, below, line 4 -- "denn." In the case of genuine thin lines the serpentine line would be still more limp, more approximate to the stroke.) The angle is the straight-line connection between the lower end of the one downstroke to the upper end of the next. The latter forms below and above an angle, and the writing movement courses with an abrupt change of direction. The festoon binds the downstrokes below through a deeply-indented bend and in such manner that the first downstroke is drawn into the deep-indented bend. On the other hand, the arcade binds the upper end of the first downstroke with the upper end of the second through a bend which is curved up and around. The thin line, which forms simply a serpentine line rather than a clear upstroke and downstroke, is no longer a fixed form of connection, but rather the dissolution of the latter, just as the double bend is not a true connective form, but rather an alternation of arcade and festoon. The connective form of the suspect is directly detectable from the script subject to identification. But how are we to determine whether the connective form in the factual script corresponds to the natural connective form of the forger, or whether it has been artificially produced?

Here, the question is usually raised as to whether it is easy or difficult for the forger to arbitrarily alter his connective forms. In general, however, this question has been posed falsely. For one thing, it depends on the type of connective form and the type which is assumed; for another, the proper answering of this question depends strongly on the capabilities and writing habits of the writer. A forger who otherwise employs in writing a pronounced connective form, e. g., a sharp angle, will of course find it more difficult to produce in disguising or copying a soft festoon or a thin line, than will such a forger who by nature employs in writing an indefinite connective form or several simultaneously. This latter occurs in the case of the majority of writers, above all in the present-day period of the general obliteration of individual marked singularities. This difference is easily explicable in the following: In general it will be more difficult for a quite straightforward and uncompromising person to "feel" or to assimilate the essence or the role of a person of a quite different type, than it will be for a person of versatile or neutral character. The objective difficulty also plays a role. It is more difficult to match in all details an indefinite connective form, e. g., a thin line, in copying than it is to match a pronouncedly-formed connective form, such as the angle. On the other hand, in accordance with our basic principles, it will be more difficult to suppress the habitual angle or to alter it into a more relaxed connective form, because the former belongs to the phenomenal picture of the will, and the falsification will usually be undertaken in the sense of connection, rather than of separation or of fusing.

Actually, from the start it should be accepted that it is scarcely possible to arbitrarily alter the connective form. It cannot be doubted that the manner of connection signifies an elemental form of basic psychical movement and that, in accordance with the individual form of connection, it is a question of the expression of persons who are of quite diverse psychical make-up. (Cf., e. g., I. Walther, "New Psychical Studies," from Kreuger, Vol II, No 3.) Writing impulses, which condition the connective form, must therefore have come from deep strata, as indeed the first freeing of oneself from the school copy is usually expressed in the appearance of another, or free, form of connection. However, the experiences of the forensic practice seem to contradict this. The frequent occurrence of angles in disguises and the ease in which such can be copied can be explained by the basic principles mentioned above. On the other hand, it is not seldom our experience that forgers -- above all in those cases in which they otherwise employ in writing an indefinite connective form -- are capable of easily and adroitly producing disguises in festoon-connections, or of copying such. On the other hand, falsifications in arcade-connections appear infrequently, except in the case of decorative handwritings. Thus, here, our basic principles appear not to be in complete accord. Of course it should be taken into consideration that in the case of the so-called connective form, as is attested by the term, it is not only a question of pure movement strokes, but of the fact that here the formation begins, since indeed many letters, e. g., n, m, u, i, disregarding upper signs, are actually arcades or festoons. Formative strokes, however, are even easier to suppress or alter than are movement strokes, since they do not have the same origin. Secondly, the connective alteration of writers

who employ indefinite connective forms represents the arbitrary alteration of the expression of a basic psychical attitude, but nevertheless here only the expression of an indefinite basic attitude. In the case of writers of very definite basic attitudes, their alteration, even through the production of another type of connection, is scarcely possible. Third, and this appears to us as practically the most important, according to our experiences, the occurrence of reversions is extraordinarily frequent in the case of arbitrary alteration of types of connection and also in the transition to angles. Thus, in the long run, production, suppression, or alteration in the case of connective forms is not possible; at any rate such cannot be maintained throughout without the occurrence of faux pas. This applies as much to disguising as to copying. In the seeking-out of reversions attention should be given the connective form. Here the comparer will most frequently and most certainly discover those places in which the facade of falsification has become gappy. The deviation from the basic principle that the deeper the causative impulse, the more difficult the suppressibility or producibility is only a seeming deviation, for this does not imply that these phenomena cannot be suppressed or produced at all, but rather that this is possible without the forger revealing himself thereby. Practically speaking, this alone is an important question for the comparison process.

With respect to the individual connective forms, from the standpoint of comparison the following might be said. The angle is the connective form of the conscious will; hence its frequency in falsification. This is manifest in the basic principles drawn up by Klages. That the arcade is more difficultly intentionally-produced

than is the festoon is evident from considerations of physiological movement. (Cf. hereto Pophal in Ztschr. f. Menschenkunde, Vol 15, page 134 f.) The former stresses lengthening; the latter the banding of the fingers and muscles in writing. However, the latter is easier and more in accordance with nature than is the former. The thin line is to be found in disguised handwritings for the most part as a reversion, not because it might be easier to produce, which is scarcely the case, but principally because it is not foreseen in the school copy. Thus, the forger, as we have seen above, almost invariably keeps more or less to the latter in executing disguising alterations of his handwriting. The so-called rapid line, for this reason, does not come into question as a rule in falsifications, because a hastily-written forgery is extraordinarily rare. The double bend is -- and this applies as well to the thin line -- not preferred in disguising, because such is a quite indefinite connection and the forger is fond of pronounced formations. On the basis of the above-introduced reasons, the imitation of the angle is indeed the easiest; next easiest is the imitation of the festoon. More difficult, however, is the imitation of the arcade, which in general is not often chosen as a connective form. Most difficult is the accurate and matching imitation of thin lines, double bends, or indefinite and alternating connecting forms.

With respect to the transition from the connective form otherwise customary to the writer to another such form in the disguising of handwriting, special attention should be given to yet another matter.

Here it is not always only a question of conscious alterations of connective form; on the contrary, the connective form can simultaneously be altered through the alteration of the position of letters alone. In itself, the rightward-inclining script tends more toward angles; the leftward-inclining script more toward festoons. This is explicable in that in the first case the downstroke is directed more toward the left, while in the second case it courses more rightward and downward. However, the connective form of course usually corresponds to the entire movement stroke. Since now, however, as we shall soon see, disguisers almost invariably consciously alter the natural position of letters, or unconsciously alter them as in the case of stiffening, those who write with a rightward-inclining script and with angles will at the same time, in the steep- or leftward-trending position of their handwriting, unconsciously alter their connective forms more in accordance with the festoon. On the other hand, those who otherwise employ a leftward-trending or steep writing tend toward hardening their festoons into angles, when they make their handwriting more rightward-trending in disguising. This automatic influence of the alteration of position on the connective form must always be given attention in the comparison process. Accordingly, for example in the case of a leftward-trending script, the festoons are less characteristic and peculiar as connective forms than in the case of a rightward-trending script. The situation is reversed in the case of the angle. In the same way, a difference in the connective form between the factual script and the suspected script in the manner described need not of necessity say much against the identity of the writers, if such difference may have come about through alternation of position.

In the discussion of connective forms it is now unconditionally necessary to once again come back to that which has been said in the discussion of the concept of characteristic. It is further necessary to supplement this. In the case of most expert opinions the evaluation of the connective form is a conceivably perverted one. To repeat with all emphasis, it does not depend on whether a type of connection is in accord in the factual script and the script subject to identification; on the contrary, it depends on which type this specific formation of connection is in the concrete case. There may indeed be almost as many diverse types of connection as there are movements which are in any way connective. They are comprised, for purposes of classification, in three -- or including the thin line -- in four main groups. The affiliation of a connection in one of these comprehensive groups and the agreement or nonagreement in the factual script and the script subject to identification bespeaks from this viewpoint nothing at all for or against the personal identity of their creators. We have already above, in the concretization of characteristics, drawn on the example of the festoon. How numerous are the formations that such can assume! It can be narrow or wide, shallow or deep, it can be drawn tightly or limply. Further, it can be unimpressed or quite impressed. For example, pressure can be in evidence in its beginning or end, or below on the line, or between the lines, or even in the upstroke. Downstrokes, between which the festoon is suspended, as it were, can trend forward or backward; they can form a sharp point with the above connective bend or they can be rounded off. The one point can be higher than the other. The bend can begin on the upper end of the preceding downstroke or below on the line. Festoons can be so-called roll-festoons, in the case of which the downstroke, in accordance with the bend, is not covered with the

* upstroke of the bend, so that small loops arise between them, or so-called supported festoons, in the case of which upstroke and bend-downstroke are covered in their entire course. All these types are only the main phenomenal forms of this type of connection, which are designated by means of a collective name and which, it is thought, can be compared as such. The angle can also appear in quite diverse form. It can be pointed, wide to widespread, sharp or blunt. In such the pressure can also occur in quite diverse places. Further, in such the downstrokes can manifest quite diverse forms, or the straight lines of upstrokes can be modified. Similar variations are to be found in the case of the arcade, so that the latter also can assume the most diverse formations. (Cf. Figure III and Appendix C.) All this related to the clearly-pronounced forms of these connective characteristics. One can only imagine what great quantity of transitional forms is possible between them! Thus, the angle can resemble the arcade through softening of the upper point; it can resemble the festoon through rounding-off the lower point. Or the festoon can receive a light point below on the base; in this case a so-called angular festoon arises. (Cf., for example, Figure IV, above: the right half of the word.) Corresponding processes can occur in the case of the arcade. For example, it can become somewhat angular above before the transition into angle. In this case it becomes an angular arcade. (Cf. Figure I: for example, the "n" on line 4 of both upper and lower specimens.) When arcade and festoon alternately follow each other, there then arises a double bend (Figure IV, below: the first part of the "n" after the "i"), from the stronger softening or flattening of which a thin line can arise. Thus, a connection can be transformed into the other. However, in each individual case this transition can occur in a somewhat

different manner. If one takes into consideration the fact that most people do not employ one and the same connective form in writing constantly, but rather several simultaneously, one can get an idea of the possibilities of variation which are present in the case of the connective form alone. We have purposely undertaken this exhaustive enumeration in order to make quite evident to the handwriting expert what should be given attention, the possibilities of comparison which are offered the expert by the connective form itself, and how absurd it is to attempt to compare festoons or angles, as such, without giving consideration to their special formation in the individual case. The endeavor which the comparer makes here in order to comprehend all these details will prove richly rewarding, for he can also be certain of having comprehended the basic characteristics which are actually indicative for the question of identity.

From the formation of the connection of letters the next step is the observation of the extent and degree of connection, and, with that, the question of the connectedness of handwriting. Within the latter is expressed the rhythm of movement and pause in writing, for the pause is as a rule bound with a recommencement. This relationship is not governed from a pure physiological-movement standpoint. On the contrary, influences of the content of that being written also play a part, to the extent that the word, which content-wise represents an entity, is also usually to be written in one stroke, as it were, in accordance with the school copy. But even here the individual writing goes beyond the writing copy. In the case of some -- ~~only a few~~ -- writers, the writing impulse extends over several words which are then written in one stroke, as was

occasionally in evidence on the part of Napoleon or Lenin. At best, however, most people write words of medium size without interruption. (Example of strongly-connected handwriting: Figure IV; little-connected handwriting: Figure I; unconnected handwriting: Figure III, lower left and right.) This degree of connection, i. e., the capability of connecting a certain number of letters, is a quite individual thing, exactly as one person breathes deeply while the other breathes shallowly. The earlier view, viz., that connection is related to the ability to form associations, cannot stand. The former expresses something much more profound, viz., the basic psychical tempo. Therefore, in accordance with our basic principles, it is to be expected that the type and degree of connection can only very difficultly be altered in the case of artificial disguises of handwriting or matched in the case of copies. This also actually corresponds to the experiences of the forensic practice. It is connection itself which is one of those rocky crags again which it is easiest for the forger to strike, because almost invariably he inserts his own connective forms into his disguised hand or is incapable of completely assimilating the foreign connective forms in copying. Thus, the connection is a comparative characteristic of the highest indicative value, self-evidently when the specific type of formation is accurately examined -- a reminder which no longer need be added upon mention of each characteristic.

Now, however, we must bring forward a very important limitation with respect to the difficulty of the alteration of connection -- a limitation which of course is in full correspondence to our basic principles. A very great -- indeed, the preponderant -- part of the

disguised handwritings encountered in the practice have been undertaken in such manner that the connection of letters is suppressed, be it through the choice of printed letters or a corresponding decorative script, be it without such. Here also -- and here above all -- the rightness of the following rule is again manifested: The radical suppression of many characteristics is relatively easy, whereas partial suppression is very difficult or even impossible. For the purpose of explication the reduction of the word-impulse to the letter-impulse, induced by the artificiality of the production of script, must again be drawn upon. Thus, the disguiser or the copier must concentrate on the production or copying of individual letters, while the one who writes naturally -- the one who keeps in mind the content of that being written -- more or less unconsciously forms individual letters, at once making of them word groups. Therefore, disregarding complete unconnectedness, one will usually have to reckon a somewhat lesser connection in the case of factual scripts than in the case of the natural hand of the forger. Finally, here one will also have to reckon individually-based differences. A handwriting copier who tends toward connectedness will find it easier to copy a connected script than one who is unaccustomed to writing unconnectedly -- one who finds it more difficult to compel himself to produce connectedness without subjecting himself to constant reversions or to the danger of giving himself away by unorganic connecting strokes. Finding it easiest in this respect is again the indefinite or versatile writer who already disposes of several degrees of connectedness in his natural hand. Thus, the comparer must give attention to all these details and limitations, if he wishes to properly evaluate the comparison of the connection in the factual script and the suspected script -- a comparison which is potentially successful -- without reaching faulty conclusions.

In this connection two other specific types of connectedness should be mentioned, for these are important for the comparer. First, in accordance with our experiences, it appears to us a deeply-ingrained habit that one person will connect the capital letter of a word with the first small letter, while another person does not do this. Second, it can often be very characteristic of the writer whether he immediately places the upper marks over the letter concerned, e. g., the dot over the "i," or whether he does this only after first writing out the word. (Cf., for example, Figure II for preponderant interruption after execution of upper signs; Figure III, above left, for noninterruption.) Full and conspicuous differences herein speak against the identity of the creator of the script. Unfortunately, many writers are undecided herein.

Another type of connection can also be of a certain value for the comparison of handwriting. This of course leaves behind no visible traces, and is therefore called immaterial connection. It is hereby a question of the subsequent movement of the hand away from the paper or of the movement of the fingers which control the writing tool -- a movement which is necessary in order to begin a new stroke after a pause. The way in which this movement has been carried out and, above all, the direction which it has taken can often be recognized from the direction of the cross-stroke in relation to the beginning of the new stroke. Above all, it can be seen whether this new stroke is only the continuation of the previous cross-stroke, or whether they run past each other. Examples: Figure III, the script above to the left, the two last lines "kurz die" and "Verfuegung steht" in contrast to Figure II in which the cross-stroke and the following strokes regularly run past each other,

often even within the word.) Thus, in the first case there is evidence of a type of connection, even though it may only have occurred in the air, as it were. This difference as to whether such immaterial connection is in evidence can render the handwriting expert a comparative characteristic which is not to be underestimated. In those cases in which the natural connectedness is suppressed or destroyed through the artificiality of the falsification, it can also often provide therefrom a clue as to whether the true hand of the forger is a connected or unconnected one, i. e., whether the unconnectedness occurring in the factual script is genuine or "manufactured." Under favorable circumstances a particularly characteristic type of immaterial connection can be found which would then be highly indicative if both scripts were herein in agreement. One might conceive of, for example, an aerial connection, so to speak, of the cross-stroke direction of the last letter of a word to the point of connection of the dot on the "i" or of the U-bend above the latter, or of similar phenomena.

If we are now to pursue further the execution of the writing movement, we shall first omit the form-stamping strokes, since such of course require a special observation, and turn at once to the cross-strokes. Then, looking back, we shall once more examine the totality of the writing movement.

The cross-strokes of words and separate syllables or letters form the conclusion of the writing movement. Also to be found here are the most diverse forms. The one stroke is long, the other short; the one courses upward and rightward in accordance with the school copy, the other steeply upward; the one is bent backward and leftward, often virtually unperceptibly. Some course rightward and downward or

directly downward; one is perhaps bent leftward in a club shape or curved below to the right; others course rightward horizontally. The one may hang downward limply; the other may be drawn downward weightily. Others may in turn be drawn sharply upward and rightward, often as if spurted forth, while others may be drawn hesitatingly or only allusively. Often they are not in evidence at all, as is the case with the so-called stop-stroke. (Widely-sweeping cross-strokes are illustrated in Figure II; hesitating cross-strokes in Figure I. Also illustrated in the latter, viz., in the upper specimen, are stop-strokes ("den," "ersten," "keine").) They also are differentiable in pressure: for example, they can be club-shaped, tapered daggerlike, fine or course. Self-evidently, all these details offer important points of comparison; their formation, for the most part constant, occurs in an individual handscript. Since they are also secondary constituents, i. e., inconspicuous, and often occur at the end of a word, where the attention of the forger slackens, one would think that they are ordinarily not altered through falsification. However, in accordance with our experiences, this is by no means always the case. Not infrequently to be found in disguised handwriting is the phenomenon that cross-strokes are drawn confidently, in controlled manner, sometimes stressfully, at any rate apparently under the influence of the conscious formative will. This can be traced to two quite diverse bases: either psychological or physiological. For one thing, it can be a question of such handwriting disguisers whose concentration slackens at the end of a word, which, as we have seen, is not at all exceptional. This results in an emphasis of the cross-stroke. Or the eventual rigidity of cross-strokes and, with that, their emphasis, might be traceable not to a conscious tension of the will of the forger, but

may be conditioned by the strong stiffening of the entire script due to the artificiality of its production, i. e., a result of the unelastic and inhibited execution of movement in falsification.

On the other hand, in those cases in which the natural cross-strokes of the forger's script also occur in the factual script, which likewise occurs often and which can easily be recognized by its appearance, they are self-evidently a very essential characteristic for the comparison process, which also applies particularly to copying, in which they are difficultly matched. They also must likewise be observed in the general cohesiveness of the total script. Thus, for example, sharp and widely-sweeping cross-strokes will also be found in other corresponding strokes of the temperamental writer. Hesitant strokes which scarcely venture out, so to speak, permit concluding a corresponding script on the part of a writer of different inclination.

Now that we have completed our pursuit of the execution of movement, let us once again look back on the totality of the thus-originating movement picture. Let us observe it from the viewpoint of ascertaining what significance it has as a total picture for the comparison of handwriting.

In itself, most characteristic for the total movement in the script is the flow of movement and its rhythm, which unfortunately in the comparison of handwriting can only be utilized in limited extent, at least as far as disguised handwritings are concerned. For it is one of the vital expressions in handwriting which is most frequently disturbed or even destroyed through intentional disguise, so that the flow of movement becomes rigid or incoherent. Of course, in those cases in which the vital expression of this flow is still

present in the factual script, its comprehension and comparison will be one of the most certain indicative bases for identification. (Figure II, for example, illustrates a well-preserved flow of movement in a falsification (upper specimen).) Unfortunately, this is possible only in rarer cases. The flow of movement is connected quite closely with vitality, which latter we have already discussed in the observation of the total form of the script. This vitality, when it is strong, will be in evidence in many disguised handwritings. However, in general the flow of movement, as such, will become slower, slack, constantly interrupted, or hesitant due to the inhibition of the artificial production, due to the reduction of the sentence- and word-impulse to the letter-impulse. It will scarcely be possible to directly compare it with that of the suspected script, since its alteration through falsification will be so great that we shall no longer be able to recognize its natural condition. As difficult and problematic as the utilization of the flow of movement usually is in the case of disguised handwritings, it is just as important and in many cases quite decisive in the case of falsifications through copying and in general for the question of the genuineness of a script. For the rhythm of movement of a manuscript, as the indication of a quite primordial vital expression, is something so individual that, though it may be easily disturbed, it can nevertheless not be imitated at all, or at least only incompletely. It is therefore not surprising that only a few handwriting copiers are able to match it and that almost all such copiers fail in this respect, for to "feel" or to rationally and volitionally comprehend such expressive phenomena which originate from the nucleus of the personality is immensely difficult. (Example of failure, Figure V

(see discussion).) An unnaturally inhibited and faltering flow of movement in the case of a questionable script is always cause for suspicion that a falsification is in evidence. It is then of course to be assumed that the doubtlessly genuine script manifests the same phenomenon. In this case a direct comparison of both rhythms is then possible; in the case of flowing rhythm of the suspected script it is possible when the original flow of movement of the forger is still in evidence beneath the copied alteration. Here also it appears proper to repeat a suggestion which has already been made earlier, viz., that a considerable degree of graphological experience and, above all, a patient and faithful feeling ones way into the script under examination so to speak, is required for a clear comprehension of any rhythm in handwriting. But it is here that endeavor can prove rewarding in often surprisingly-certain findings.

In the observation of the total movement in handwriting it is now further of particular importance to give attention as to which direction is predominantly maintained by the writing movement in the factual script and the script subject to identification. In our European handwriting systems the writing stroke courses from left to right, i. e., all these handwritings are rightward-trending. However, in the graphological sense, one understands by rightward trend the movement stroke which favors this direction to a special extent. Here, an impetuous impulse to trend rightward, i. e., forward, in the sense of the writing movement, can arise. Thereby, it should be given attention in the comparison that through a disguising or copying a more or less considerable braking of the rightward trend invariably occurs. This is quite natural, for the diminution of

speed, the willful, usually exaggeratedly strong, control of the writing movement, and the more exact and more detailed stamping of forms by the forger are all inhibitory moments. But also the psychological pressure, to which he is usually subject, his clandestine tendency, and the perhaps unconscious fear of discovery, as well as the necessity of giving attention to detail in order to disguise his own hand or to feign a foreign hand -- in short, the "drawing of oneself together" -- hinders in most cases the carefree writing of the writer who otherwise naturally tends toward a rightward-trending script. Of course there are also cases in which this breaks through the barrier of falsification or is at least revealed in individual signs. Such, for example, are repeatedly reappearing broad strokes; in the case of lower loops, immediate continuation of stroke rightward instead of a swinging about toward the left in forming loops; or the leaving open of medium loops under the strong rightward stroke; or individual widely-sweeping cross-strokes; and the like. Likewise, in the case of braking indicated by the sharpness of letters the rightward stroke can assert itself, and in such manner that the downstrokes of small letters become quite diagonal or leftward sloping, and so that they in turn course rightward, i. e., rightward and downward. Thus, in most cases it is not difficult to ascertain whether or not the natural handwriting of the forger is rightward-trending. Leftward trend in handwriting -- for the script as a whole cannot be leftward-trending -- is for the most part easier determined, since in the case of such impulses or habits of direction it is almost invariably a question of such impulses or habits which are quite primordial and which are scarcely suppressible, repeatedly breaking through the barrier, as it were, so that usually a direct comparison with the suspected script is possible in this

respect. Belonging to such leftward trends, for example, are all sharply rolling movements such as roll-festoons, rolling movements in loops; further, the leftward motion of all upstrokes, e. g., in cross-strokes or in upper loops, as in the German-style "d"; further, all backward-trending movements, as in U-bends, in the cross-stroke of the "b" instead of a period, in capital letters or where they otherwise come into question. We shall again encounter them in the discussion of individual letters. It is always recommended that the factual script and the script subject to identification be examined as a whole for the determination of rightward or leftward trend, and that then an investigation be conducted on the finding on the basis of confirmatory or contradictory details. (Rightward-trending script: Figure IV, below; more leftward-trending script: Figure I.) Hereby, above all, sudden deflections of direction should be given attention -- deflections which are often very characteristics of a writer and which are difficultly suppressed by him.

The second great line of direction of handwriting is the vertical, which appears above all when the rightward-trending stroke is less strong. In this connection, first to be submitted to examination is whether the writing movement tends more upward or more downward. The difference will manifest itself principally in the length of upper lengths or of lower lengths. (Thus, for example, the lower lengths in Figure II are more pronounced than in Figure III, left above.) One of the most positive and certain results of previous experiments on the disguising of handwriting is that this condition of length is scarcely alterable willfully -- a finding which is completely confirmed by the experiences of the forensic practice. On the part of the comparer this permits drawing important

and certain conclusions. Thus, for example, if in the factual script the upper lengths are especially stressed, if on the other hand the lower lengths are particularly stressed in the script subject to identification, or vice versa (for example, in the one case the upper loops can be thwarted, in the other the lower loops), then this speaks decidedly, if not decisively, against the identity of the creator of the script. This conclusion is especially compelling in those cases in which various conditions of length are in evidence within the lower zone or the upper zone, e. g., in the one script individual lower lengths are drawn far under and others are formed smaller, while in other scripts all have been drawn equally long, or the differences are manifest in other lower lengths. Of course ~~reverse concordances~~ in these details of the distribution of lengths represent quite considerable, often decisive, evidence for the personal identity of perpetrator and suspect. As can the conditions of length, so can the conditions of pressure signify an emphasis of one or the other direction. An emphasizing of the lower direction, to which the downstroke of course belongs, will attest a strong lower pressure, above all also in the lower lengths. An emphasizing of one or the other direction can also be recognizable in the cross-strokes, which can trend upward or downward. The lower stroke can be emphasized by the so-called stop-stroke, i. e., by a suppression of the actual cross-stroke in favor of a strong downstroke at the end of a word or letter. The examination of the relationship of upper lengths and lower lengths is thus one of the most important tasks of the comparer of handwritings. Hereby he must of course take into consideration the fact that in the case of disguising, the artificiality of the production of script can evoke a general emphasis of the upper and lower stroke at the cost of the rightward stroke, due to the strong stiffening which is here usually in evidence and which has been discussed earlier.

Finally, a brief reference should be made to a handwriting phenomenon which is very important for the essence of an individual handscript, viz., the speed with which the movement stroke is executed in writing -- a characteristic which also plays a great role in analytical graphology. Unfortunately, this is scarcely utilizable in the comparison of handwriting, because, as has already been frequently pointed out, only in the rarest cases is the handwriting falsifier capable of maintaining his natural speed of writing in the production of the forgery. No efficaciously-camouflaged disguised handwriting and no imitation which accurately matches the strokes and forms of the script copied can be executed with a considerable speed of handwriting movement. This can be explained in that a conscious, intentional, "nonmechanical" artificial production of script, in accordance with an imagined or actual model, invariably requires a certain amount of time; this applies especially to the accurate assimilation of foreign forms on the part of the forger -- forms which he considers most important of all. Thus, it can indeed be said that practically all more or less successful forgeries and also the greatest part of the unsuccessful have been written in relatively slow tempo; further, that, in general, a direct comparison of the factual script and the suspected script from the viewpoint of their speed of writing has no purpose. It can then be said that it is a question of little-disguised and carelessly-written disguises. But of what is it a question when we find pronounced characteristics of speed, e. g., anticipative upper signs or thin, hastily-drawn lines, in a forgery which is otherwise executed in slow or moderate tempo? In this case we of course cannot directly determine whether this haste is to be traced to the falsification activity or whether it is a part of the

natural handwriting of the falsifier. As a falsification characteristic speed in itself is rare. Nevertheless, a precipitation of the writing movement can arise through the haste of an unclever writer, the fact that one is carried away by the content of that being written, or through affect in the case of an excited writer. The most apparent and frequent case is that it is a question of faux pas, i. e., that the forger has reverted to the tempo of his natural hand. (Cf. Figure III, right, line 5 -- "tre.") This can be assumed with seeming certainty when the characteristic of speed consists of thin, hurriedly-drawn lines. Thereunder one understands such as are tautly, elastically, and energetically dashlike executed, even in the haste of advancing, i. e., not like the so-called genuine thin lines which wind forward limply. But there is still a third possibility as to the way in which the speed characteristics could have arisen in a slow script. The tempo can also alternate in a natural script: certain words can be written more rapidly than usual, perhaps due to affect; or a writing movement slows or accelerates in the course of writing. If such phenomena are found in concordance in both the factual script and the script subject to identification, then this is a very important argument for the identity of the creator of both scripts. Such deviations from the otherwise usual habits of the writer might be classified under the concept which Klages calls "movement inconsistencies." However, these are not limited to characteristics of speed; they are also to be found elsewhere, e. g., the occurrence of fine dots over "i's" in heavily-impressed writing, the sudden appearance of leftward trend in a pronouncedly rightward-trending script, and so on. Klages (Die Probleme der Graphologie [Problems of Graphology], page 25) justifiably pointed out that these are very important characteristics for the comparison of handwriting, and we have thus taken them into consideration in our fifth basic principle.

5. Orientation to the Writing Space

Just as the movements of a person can permit making various conclusions on his being, so can much also be learned from him if one observes how he comports himself in relation to his environment and his relations with his neighbors. This also applies when we seek to recognize the personality of a person from his handwriting. Even the writer has a certain space with which he must cope. Just as the person, in general, has his environment in which he is active and in which he must assert himself, so the writer is bound to the writing space upon which he fixates his thoughts through handwriting. (Of course in handwriting it is not a question of three-dimensional space in the usual sense. We consider artificial the attempt to establish pressure as profound and effecting the third dimension. Therefore, strictly speaking, one should speak of a "writing surface." Since the expressions "space" and "writing space" have been adopted by graphology, and everyone knows what is thereby understood, we have no objections against also retaining them for the comparison of handwriting.) Just as previously we have pursued in general and in detail the writing movements of the forger and the suspect, we shall now want to examine which clues are to be gained in the comparison of handwriting by the observation as to the manner in which both writers cope with the writing space. Accordingly, it must first be known how such orientation with respect to the writing space occurs. Here, one is at once confronted with two different possibilities in the distribution of space. The one writer fills the space completely with writing, squeezing in, so to speak, as many sentences, words, and letters as is possible into the available space, and limiting the margins and intervals to the bare minimum. The other uses the writing surface liberally or extravagantly, overemphasizing intervals

or margins, or dividing it according to aesthetic or legibility viewpoints, without giving consideration as to whether he covers the space with a great deal or only little of his handwriting. There are all possible shades between these extremes. But every writer will tend more to the one or the other side, and this tendency will be manifest as a rule in the disguising of one's true handwriting or in the copying of a foreign script. (Space-filling script is illustrated in Figure II, in contrast to Figure VI, above.) Some writers will automatically keep the left margin small, going over the right margin of the paper, beginning very high on the page and ceasing far below, and squeezing together the words and lines within. On the other hand, others will maintain great intervals and large margins. From this differentiable condition of the filling of space a clue is gained in the comparison process for or against the identity of perpetrator and suspect. Of course this is not always possible, for most forgers will assume the space picture which reflects their attitude to their environment and which to a great extent is subject to control through conscious will, i. e., being strongly under control.

As is repeatedly shown by the experiences of the forensic practice, the formation of the left margin -- at least as far as its details are concerned -- is least influenced by conscious falsification. This statement appears surprising at first, even though it might otherwise be designated a "disciplined margin," which designation is often favored, i. e., as such which is subject to a large extent to the conscious formation. This phenomenon will become understandable, however, after we have observed the following. If we now observe, as in the case of the writing movements, the writer in the manner in which he takes up the writing tool -- now,

however, giving attention not to the manner of execution but to the place of the application -- then we pursue thereby the development of the left margin which depends on the place of each individual initial application at each line. It is thus here a question of a process which occurs before the actual writing, and this initial action appears -- as we have already been able to determine in the case of movement -- to originate from the most deeply-based impulses or habits. Therefore, in the case of every writer, it remains remarkably constant, as occurs in the case of artificial productions of handwriting, and this applies, as has been said, as much to the manner as to the place of the initial application, so that the condition of the left margin can be almost as important for the comparison process as the formation of commencement traces. At best, one might in thought or by means of an actual pencil draw a line representing the left margin, which is realized in such manner that the beginning points of successive lines are bound together. Only in rare cases will this be perfectly straight and vertical; on the contrary, deviations in the total direction or in the individual course will be almost invariably in evidence. In the case of very many writers the line courses rightward and downward, so that the left margin becomes increasingly broad. It is such cases in which one will usually encounter in the script a strong rightward trend. This attests for the most part to writers who forge ahead, so to speak, whereas those who invariably begin a new line exactly under the beginning of the upper line are especially disciplined and often pedantic. (Here, see Figure III, upper left, in contrast to the specimen on the right.) In the case of the last-mentioned writers, this will also be expressed in their handwriting as a whole, as well as in the manner in which they execute falsifications. On

the other hand, if the connected lines mentioned course leftward and downward, i. e., if the left margin becomes narrower, this then signifies a braking of the writing movement during the course of writing. We will then certainly find in the script leftward trend or indications of inhibition; we will thus be able to conclude a precautious, perhaps inhibited, writer. If the connection mentioned forms a serpentine line, then we may conclude a strong alteration of impulse and inhibition. Thus, exacting attention should be given all these differences in the comparison process -- above all with respect to their fluctuations -- since neither the disguiser nor the copier heads these phenomena, nor do the influences of stiffening play hereby a role, so that herein we can comprehend and compare peculiarities of the true script of the falsifier.

The formation of the right margin is not of the same importance, since the right margin is more subject to the conscious control of the falsifier, exactly as is the case with cross-strokes in contrast to commencing strokes. The disguiser or copier, who in the main gives attention to his own distribution of space or that of the foreign script, will see to it that he manages with his lines. Likewise, increased regularity, which occurs with greater stiffening, will proceed in this direction. The temperamental, unclever, or reckless writer will also be hard pressed by the barrier of the right margin in the artificial production of script, being obliged to go over this margin, stop short of it, or get around it by directing the line upward or downward, as occurs in his natural script. (See Figure III, right.) Showing concordance in the factual script and the script subject to identification, such a characteristic formation of margin can have considerable indicative value. This will less often be the case with broad or at least well-maintained right margins, since this formation can be conditioned in the factual script by the artificiality of its production.

Previously we spoke of the outer writing space, i. e., the fitting into the writing page of the entire script. However, of the same significance is the so-called inner writing space, which reflects more of the attitude of the writer toward himself and to his most immediate environment. It is here a question of the spatial conditions of words and lines in relationship to each other, and the execution of individual lines within this confined totality of script. A writer who is accustomed to leaving spaces between words will manifest the same tendency in artificially disguising his hand or copying that of another. Even inversely, this will usually be the case. Of course here considerable intervals can also arise through the falsification, as such, since the reduction to the word-impulse and concentration on the formation of words can cause a certain stopping after the word and thereby a greater interval after its completion. The same phenomenon, in the case of copying, can indicate the unguineness of the script, if, for example, the copied script manifests shorter or more irregular word intervals. We shall treat of the intervals between letters in the discussion of breadth and narrowness.

The execution of line can be of great indicative value for identification. Here, strongly noticeable will be the difference between the strong-willed, coldly-planning, and calmly-proceeding writer, in contrast to the temperamental or excitable, as well as between the unclever and the clever. In disguising or copying, the affect-influenced writer will scarcely ever succeed in drawing straight lines in accordance with the imagined or actual model. The line will invariably fluctuate in some way, or it will trend upward or downward. The elan of the writer will cause the line to be drawn upward; the influence of depression will cause the line to be drawn

downward. All this will alter the natural handwriting of the forger, if these peculiarities are circumstantially conditioned or if they creep into the forgery -- if they are permanent peculiarities. The type of execution of line itself is difficultly suppressible and will repeatedly penetrate the disguise or the copy. Moreover, such execution forms a characteristic to which the forger scarcely ever gives attention. (Cf. Figure IV and the discussion thereof.) Of course its peculiarity will often be somewhat obliterated by paper having predrawn lines, but this is by no means invariably the case. For example, not infrequently to be found is the peculiarity of the writer of writing above the predrawn lines. Also only difficultly suppressed is the habit of drawing steplike-ascending or descending lines. As it is elsewhere in the comparison of handwriting, likewise in the case of the execution of line it is much less a question of coarser and outward concordances or differences, which of course are quite indicative, than it is of fine and barely noticeable ones. Here also it is above all a question of disturbances of the smooth execution of line. Of course such can manifest themselves in quite diverse manner. Thus, a few examples of such as are occasionally important in the practice should here be advanced. For example, in many handwritings the continuity of the execution of line is repeatedly interrupted in such manner that individual downstrokes of letters are drawn under the line, i. e., thrust through the latter, so to speak. This can occur sharply, like the prick of a needle, or it can be carried out coarsely or impressedly. Such an interruption of line can occur only in the case of certain letters or it can occur irregularly. Or it can occur repeatedly and simultaneously in the case of several letters, or even in the case of a certain downstroke of a letter, e. g., the first or the last downstroke of an "m" may be

drawn under the line. Further, such phenomena can appear in rhythmical alternation, independently of letters, e. g., at the beginning or end of a word. However, not only downstrokes, but entire letters or letter groups, can disturb the execution of line. For example, not infrequently found in scripts is the phenomenon that a certain letter is situated higher or lower than others, in relation to the line. Or such can occur regularly in the case of the initial or final letters of words. In the case of letter groups it is the final syllables, such as (the German) "-en" or "-er," which tend to stand higher or lower in relation to the line. Often to be found instead of penetrations of the line by downstrokes is the inverse phenomena, viz., downstrokes interrupt the straight execution of line by remaining suspended above the line -- "lignes suspendues," as they were dubbed by the older graphology. (Examples: Figure II, lower specimen, the "i" in the last word of the first line of text, the "n" in the first word of lines 5, 9, and 11.) Such are to be found within the word, e. g., at the end of the word, as well as occasionally within the letter, e. g., in the three downstrokes of the "m." Of course in the case of these phenomena exacting attention should likewise be given their form. The suspended downstroke is sometimes curved leftward; it can also be coarsely or impressedly suspended, so to speak. Or it can form a sharp, small stroke, or it can be "stunted." Upwardly-drawn letters or groups of such can be drawn upward forcefully or limply, revealing a certain lack of direction. In the case of disguised handwritings, insecurities of direction in the execution of line can also be caused by ones becoming uncertain in ones style of disguising. In the case of forgeries carried out by means of copying they can be much more indicative as deviations from the true

script. They indicate quite strongly the presence of a falsification, and if found in the script of the suspect they reveal the latter as a forger, to the extent that it is a question of corresponding phenomena in relation to length, form, intensity, and connectedness in specific letters or rhythms. If in all this they are not in accordance, one must invariably reckon that they could have resulted from diverse causes. Accordingly, only with precaution can they be utilized as indication as to the identity of writers. Invariably the most important and most indicative are the virtually unnoticeable penetrations of line which are recognizable only to the practiced eye, no matter whether or not they are affixed to certain letters, just as are the suspended downstrokes which repeatedly occur in certain parts of letters. In the case of all these phenomena it is a question of typical "identification characteristics" in the above-established meaning which perhaps evade direct characterological interpretation but which originate from primordial impulses of the writing movement or inrooted writing habits, lie without the will and the knowledge of the forger, and thus represent unquestionable attestation for or against the personal identity of perpetrator and suspect.

From the inconspicuous we now turn to the most conspicuous characteristics of handwriting, viz., size, situation, and width. They might just as well have been discussed in the observation of the movement picture, since it is they which above all condition the expansion of a script and, with that, its intensity of movement. But they are also characteristics of the filling of space, inasmuch as they -- to apply an expression of Heiss -- are space-consuming characteristics in contrast to the space-sparing intervals. This applies above all to size and width, whereas situation is

inseparably connected with these two aspects. But here, as is always the case in the comparison of handwriting, we shall likewise find that by and large, roughly speaking, their form indicates little, as does the singular observation of their details and their conditions.

In observing these characteristics, above all it should always be taken into consideration that to a great extent they are subject to the influence of the stronger stiffening which occurs in falsification and which we have treated in detail above, as well as to the so-called law of attendant alteration. It should further be taken into consideration that they will appear to the forger as most requiring of alteration, in addition to the form, as such, in disguising his handwriting. Further, in copying, the forger will give attention to them most of all. Thus, their alteration, as contrasted with the handwriting which the forger otherwise uses, in many cases bearing direct or indirect connection with the falsification, is to be accorded only limited utilization in the comparison process. Disregard of the foregoing represents one of the most frequent causes of faulty expert opinions. In the case of copied forgeries, the consideration of an enlargement, narrowing, or rendering vertical of a handwriting, in contrast to the unquestionably genuine handwriting, is almost invariably important, inasmuch as such provides grounds for suspicion that stronger stiffening, i. e., an artificial production, is in evidence. Of course the assertion that a falsification must invariably have been carried out by means of increased expansion of the script is incorrect or at least exaggerated. In the practice we know of a sufficient number of falsifications in small script, above all when such

corresponds to the natural handwriting of the forger. This assertion would also contradict the basic principle that in general falsification occurs in the sense of tenseness and concentration, rather than of laxness or relaxedness.

In order to establish that it is easy to alter the size of one's handwriting we need conduct no experiments with a great many or only a few experimental persons. From his own observation or from those of others every layman knows that one usually tends to write an address larger than a text; that this is also the case with many signatures; that when one wishes to write a great deal on a small piece of note paper, one tends to decrease the size of one's hand; that for representative purposes one usually writes official documents larger; and so on; and that all this occurs with no great effort. Therewith, the breadth of the script is also usually altered. It is also known to the graphologist that very frequently the writer will extend his script when he is in a very good mood, that he will shorten it when he is depressed. (A long writing tool can also increase the extent of handwriting. Cf. Luthe, "On the Execution of Handwriting," loc. cit., pages 98-99.) The forger can quite easily alter the position of the script by turning the paper a bit. Handwriting becomes steeper by trending it toward the right in relation to the body; it becomes more rightward-slanting by turning the paper toward the left. In the presence of an inward declination with respect to the recipient or the contents of a letter, sensitive persons write more steeply or narrowly than is the case when they are engaged in writing an ordinary piece of writing to a person. It is thus quite to be expected that in the gradations of difficulties of production or frequency of alteration, situation, size, and breadth appear on the side of

easiness or frequency, as it is in the case of the gradations of the direction of attention with respect to conspicuousness. Since here in addition, as has been said, the influence of stiffening also occurs, these characteristics, as such, must be designated little fruitful for the comparison of handwriting.

But, mark well: only these characteristics, as such! It is quite a different matter in the case of rhythm and the proportions of size, situation, and breadth. In contrast to the foregoing, these have a particularly great indicative value. Here it is once again a question of handwriting phenomena which manifest themselves as the expression of inborn and primordial individual impulses and deep-lying writing habits which the writer is almost invariably unaware of, ~~and which cannot be directly or arbitrarily~~ suppressed or altered. Such phenomena are quite numerous and, with sufficient attention, easily determined. For example, a writer may have the peculiarity of the so-called initial emphasis, i. e., he may tend to write larger than others the initial letter of a word, or only the initial upstroke and downstroke, e. g., an initial "m" or "n." Or we may find the inverse phenomenon, i. e., the initial letter or letter constituent may be smaller than the following. The same phenomenon can also appear at the end, e. g., the ends of words invariably appear larger or smaller than the other letters or letter constituents. Or the word entity in general may become larger or smaller toward the end, so that a line connecting the points of short letters runs upward or downward. The highest point or the highest curvature can also occur in the middle; such of course can also be traced to a curved execution of line. But not only short letters, such as the "i," but long letters, such as the "f," as well as medium-long letters ("l" or "g"), often

become conspicuous in relation to the remaining script, due to their increased or decreased size. These phenomena occur partially rhythmically, partially irregularly; they are in part bound to certain letters; in part they are not. Thus, for example, one may write the "a" basically larger, or the "i" usually smaller; or another may draw further downward the loop of the "f," to a lesser extent downward the loop of the "g"; or the small loop of the German-style "v" or "w" may be drawn far rightward in relation to the other letters; and so on. Exacting attention should be given all these "trivialities," as well as to the distribution of size between upper strokes and lower strokes, which has already been discussed above, and in particular to their relationship to each other or the relationship of short letters and long letters. Likewise, the relationship of the short letters, the so-called middle range, to the upper strokes and lower strokes is of great importance. The one person draws far upward the upper strokes and far downward the lower strokes, in the presence of a relatively low middle range; the other has higher short letters, shortening upper and lower strokes. Thereby the script of the one proceeds away from the center, i. e., becomes centrifugal, while the script of the other proceeds toward the center, i. e., becomes centripetal. This we have already briefly mentioned in the treatment of the direction of movement.

All these phenomena, of which a part could be classed under the above-mentioned "inconsistencies," tend to creep obstinately, so to speak, into the forgery, in the case of disguised and copied scripts, often revealing with great certainty the perpetrator -- presupposing that with respect to their individual form they have been submitted to exacting examination, since otherwise they can

easily erroneously be considered concordances, then leading to a false clue. If it is a question of the fluctuations of size, in many cases it is recommendable that a line be drawn with pencil with respect to the following points: first, upper strokes; then, short letters; and, finally, below the lower strokes. The course of this line in both writings should then be followed. If this course proves corresponding in both cases, then this can be considered a quite important indication of identity. (Cf. Figure IV and discussion thereof.)

It is a like matter in regard to the breadth of handwriting. If here inconsistencies can likewise be traced to the unequalness of the writing impulse in forging, then the sudden appearance of broad strokes in an otherwise narrow script and vice versa, if such also appear in the script of the suspect, represents a quite important indication of personal identity with the forger. If the factual script itself appears narrow, this could have resulted from falsification. If, however, to be found in the factual script are repeated rightward-trending upstrokes, then it is appropriate to suspect that such are faux pas which reveal that the forger has a broad natural handwriting. If the fluctuations in width of the factual script and the script subject to identification are in correspondence, then this represents in general a very indicative characteristic. These fluctuations also often occur in certain word series or letter groups. Thus, one writer tends to write more broadly the beginning and end of a word, compressing the center; another tends to write broadly at first, then progressively narrower; still others begin narrowly, only broadening their script slowly. Many writers compress individual letter groups,

e. g., "sch" or final syllables; some write more narrowly or broadly the beginning or end of a word or sentence. In relation to their width, individual letters can also be quite diverse, e. g., the capital M or H of Latin-style, or the M and N of German-style, handwriting. If the fluctuations of width have a certain rhythm, then they, as all rhythms, are of that much greater indicative value. Whereas the situation of script, i. e., the angular tendency of letters in relation to lines, actually, as such, proves nothing as far as identity is concerned, situational proportions in general are not without significance. (Cf. Figure I and discussion thereof.) Thus, for example, a forger who customarily writes a strongly rightward-trending hand is susceptible to reversions to his rightward trend in his leftward-trending disguised handwriting or in a corresponding copied forgery, the more so if he produces or undertakes only a partial leftward trend. Many persons write a so-called "mixed" hand, i. e., their upper, lower, or long strokes trend rightward; their short strokes trend leftward or are vertical. Here, to be sure, it is often a question of an acquired writing peculiarity, which, however, is deeply ingrained and easily causes reversions in falsifications. Here also, the situation which deviates from the other letters is often bound with certain spots or letters. Thus, for example, we may find the phenomena that the final letter of a syllable or of a word is slanted leftward, or that a certain capital letter is usually more vertical or slanting in relation to the following letters. This also occurs not infrequently in the case of long letters, e. g., the German "h." Some writers have the habit of applying a rightward trend to upper strokes or some of these strokes, or of applying a leftward trend to lower strokes (example: Figure

III, above left), or vice versa. Such situational fluctuations are particularly likely to occur in letter groups. Thus, in the case of the "sch" written in German-style, the upper strokes or lower strokes of the "s" and the "h" trend toward each other or away from each other. All these details must be given the most exacting attention. As much as we ordinarily advise against mechanical processes, in the comparison of handwriting, nevertheless in such cases in which the naked eye does not suffice one might make use of a compass to measure and compare the curvature of trend, if only the evaluation of these findings is not schematic.

A special treatment would be necessary in those cases in which the writing space available to the forger is limited, e. g., when he has no single sheet of paper or card or even several such available to him, but must reckon with a specifically-limited space; or when, due to a writing custom for reasons of clarity or tradition, a certain type of the filling or formation of space is prescribed.

The latter is the case with the address. (In regard to this matter a special investigation has been conducted by M. Keller at the instigation of Klages: Die Bedeutung der Adressenschrift fuer die Schriftvergleichung [The Significance of Written Addresses for the Comparison of Handwriting], special publication of Ztschr. f. angew. Psychologie [Journal of Applied Psychology], 1930.) The specific manner in which the writer distributes the words of an address in the available space -- particularly the manner in which he distributes the words on the individual lines -- in general appears to be a fastly-ingrained habit in each individual person, for in accordance with the results of the afore-mentioned investigation

deviations and fluctuations are relatively rare. The manner of writing of individual address-writers renders an extraordinarily large number of diversities, each in accordance with the individual author of a script. The number of words used on an individual line is quite diverse; the interval between Christian name and surname, or between the names of a dual-ownership firm, or between individual lines is likewise diverse. The one writer places the word "to" before the address, or "in" before the destination; the other does not. Others are antiquated forms of address, e. g., "wohlgeboren" [Sir, Esq.] and the like. All this renders important points for the comparison process. The manner in which the addresser arranges below each other the individual words on the various lines is also very important and can be quite diverse. Thus, an imagined line or one drawn in such manner that it connects the beginning words of the individual lines can trend rightward or leftward and below, analogously to a narrowing or broadening left margin, or the beginning of the middle line can project rightward or leftward, so that the distribution of lines accordingly forms a curve which is open either to the left or the right. (Similar points of view likewise apply to the closure of a writing with the signature. Cf. Figure I in which accord has been indicated by a line drawn by the expert.) But there are also other diversities to which attention should be given. The hesitant or leftward-trend inclined writer will place the address more to the left; the "go-ahead" or rightward-trend inclined writer will place the address more to the right. Another writer may prefer the mid-zone. The one writer will compress his words; the other will expand them; the one will begin far above; the other will place the address at a lower point. Thus, a seemingly unending number of variations can

be imagined. It has already been mentioned that in the case of most addresses the script is larger than that of the text. The importance of the differences of such filling of space is also the reason for our requirement that the writer be given free disposition in regard to the filling in of the prescribed spaces for address and return address in the dictation of handwriting specimens. The space which is left free for the writer for this purpose should correspond in size and form to that of the envelope or address side of the card. It is also important to observe whether the surname or the city destination in the address is underlined and, if so, in which manner. In our opinion, similar results should be obtained with the investigation of the notation of the sender with respect to the constancy of the writer. The sender notation is sometimes placed on the front side of the envelope, sometimes, but more frequently, on the reverse side. In accordance with the corresponding viewpoints, such examination should not be left out of consideration.

It is in turn a somewhat different matter in those cases in which the writing space available to the forger is limited from the start by something which has previously been printed or written on the paper which is to be filled out, so that for this reason the writer is not completely free in filling in the space. This applies principally to the forged filling in of forms through either disguised or copied handwriting, or when a name is to be inserted in a previously written-out contract or promissory note or finished receipt, or in the case of all forgeries involving the insertion of words, sentences, or figures in a genuine document. Here it is often very characteristic, and for the detection of the falsification and of the falsifier very conclusive, to observe in what manner the

forger, on the one hand, and the person whose handwriting may have been copied, on the other, completes the filling in of a limited space, i. e., above all, the manner in which he adjusts to such a space. Then it can be determined, for example, that upper strokes appear suddenly impressed, as if they evade, so to speak, the script which lies above; or that the final letters shrink back, as it were, from the space limit which they encounter; or that upper or lower strokes appear rather curtailed as a result of the existing lack of space or that feared by the writer. Of course all this is only an index of falsification. However, if the suspect comports himself in the writing of his handwriting specimen in a manner entirely in correspondence to the comportment of the writer of the factual script, then this is a strong indication of personal identity. The diversity of such reaction to the lack of space also appears very characteristic for the psychical state of a writer. Therefore, in the comparison of handwriting it must invariably be given consideration in such cases.

6. Form Expression

Now that we have obtained a clear perception in the theoretical part of our work with respect to the concept and the significance of form, and in particular to the relationship of letter form to script form, we now turn to the observation of the form picture, as such, and its utilization in the comparison of handwriting. Here, we shall begin with the totality of forms in a script, thereupon going into the details of forms.

However, before we proceed accordingly, the following should be briefly pointed out. Our constant warning against a mere comparison of form, especially a mere comparison of letters, should of

course not be misconstrued as being based on an underevaluation of the importance of the form content of a script. Neither should our warning be misconstrued as implying that a proper comparison of handwritings could proceed without the comparison of forms. Nothing could be less implied by us than such an interpretation. Self-evidently, the establishment of the concordances and diversities of form is of the greatest importance for the ascertainment of a forgery and the exposure of the forger, to the extent that one does not limit the concept of script form to letter form alone. According to the formulation of Heiss, form is the end product of the writing process, its crowning and fulfillment of purpose. Graphologically, form signifies the realization of inborn formative forces and those "drilled-in" in the course of life, i. e., the result of the struggle of individuality with tradition and the influences of environment, divulged in the writing space. Form is matter into which the writing movement has solidified, i. e., it is that which remains finally from this movement, that which often alone remains directly and certainly comprehensible in the comparison process. Its great importance in the forensic identification of handwriting is manifest in that in every falsification, be it a disguise, imitation, or forgery, the conscious will of the falsifier appears decisively in the foreground in the stamping of certain forms. That which we have always -- and still do -- warn against is the comparison of completed letter forms in accordance with their outward "similarity" without regard to their origin, in particular to the movement and stamping strokes from which they originate and to their details which distinguish them from other, outwardly similar-appearing forms. Such comparison in the practice is unfortunately still a mechanically carried-out, unintellectual, and therefore

graphologically impossible process which leads to false conclusions. Only he who has a clear perception with respect to the psychological forces which have led to this certain form, with respect to the position of these individual forms in the script totality, and with respect to the physiological connections which have perhaps played a role in their development, has understood them so completely that in the comparison of them he can say with some degree of certainty whether or not they have originated from the same writer.

In the observation of the forms of a script in its totality, in general the outlines of this script will first catch our eye. These, expressing it quite briefly, can be angular or round. Accordingly, from the viewpoint of the movement stroke, one distinguishes between an angular- and straight-stroke script. The one type of writing movement manifests round forms, the other angular. This differentiation does not concur, for example, with the above-described differentiation of angle on the one hand and festoon and arcade on the other, which relates only to the connection of downstrokes. Neither does it concur with that between German- and Latin-style scripts, of which the one manifests principally angularness, the other roundness, but which can be turned in the other direction by the writer, as we have already seen in the treatment of the school copy. (Both scripts are also differentiated otherwise, e. g., in centripetency or centrifugence and in rightward trend or verticalness.) Thus, disregarding all this, we shall simply examine the script to see whether it appears angular and sharp or round and soft. In actuality it is here a question of quite profound differences in the script form which of course have throughout a psychological basis. Just as hard, uncompromising, strong-willed, decisively forward-striding, battle-ready people distinguish themselves in

their bearing and mien from softer, pliant, compromising, more emotionally-conditioned, diplomatic people, so in the case of all writers there is present either a tendency toward the line and to the angle resulting from the abrupt change of the line of direction or a tendency toward roundness and soft connectedness. This is of course most sharply pronounced in the forms completed by this execution of the writing movement. Likewise, in such scripts in which angular and round forms are to be found alongside each other -- and such are of course not uncommon -- or in which the one form changes into the other, we can usually determine the direction of the greater preference of the writer. Nevertheless, it may here be a question not only of two different attitudes toward the environment but of different personality structures, as one speaks of springing and flowing psychical expirations in regard to types of constitutions. The transition from the one to the other manner of writing is then one of the most dangerous rocky cliffs for the disguiser who alters in an especially conspicuous manner his handwriting, or for the copier or forger who must assimilate the handwriting of another. Particularly difficult is the transition from a hard and sharp script formation to a soft and round, because this does not occur in the sense of a constriction in the restoration of characteristics of the will but under the suppression of such in the sense of relaxedness, and, furthermore, because the involuntary influences of stiffening often merge into angle and rigidity. (Example: Figure IV.) However, the transition from curved to angular script is not very easy; neither is it easy to maintain for a longer period such script without faux pas. In relation to all this one should bear in mind that it is a question not only of the production of angles, speaking in general, not only

of the type of connection, but of the total form of the script, e. g., of the formation of loops, of commencing and ending strokes, of downstrokes, which will be conspicuous above all in long strokes, of enrichments, and so on. Everywhere where in the formation the difference of angularness or roundness, pointedness or soft transition, appears -- and this is the case not only in the formation of letters but in all script forms -- the otherwise round-writing writer who either intends to or must write sharply in the factual script is subject to the danger of reverting to his curved movement strokes and, therewith, soft forms. Inversely, this is even more the case. Since it is here principally a question of the total picture of the script, and less of individual characteristics, it is recommended in the examination of the factual script and the script subject to identification with respect to roundness or angularness that the scripts be first observed from some distance, thus obtaining more of an impression of the total effect than of details.

A further very important viewpoint -- especially for the examination of disguised scripts -- is that of determining whether the writer tends more toward enrichment or simplification. As a rule the handwriting disguiser will alter his hand in accordance with the one or the other direction. Thus, the one will disguise his hand by means of adorning flourishes, while the other will often produce printed scripts or similar simplified decorative scripts. Moreover, almost every handwriting disguiser applies lesser adorning flourishes, even when he otherwise simplifies the script. On the other hand, a full ornamentation of script for the purpose of disguising it appears to be rare; perhaps it is too much at variance with modern practicality. (In his L'écriture des canailles, page 195,

Crepieux-Jamin describes such a forgery.) It is easy to recognize as artificial ornamentations individual decorative flourishes. However, if the script is strewn with such, it can often be quite difficult to recognize the natural handwriting under the artifice. But if the latter is possible, then one has before one the genuine script of the forger, since the forger is as a rule content with this type of disguise. Under certain circumstances one can also draw conclusions on the peculiarity of the movement and formation strokes of the undisguised script of the forger from the more closely related formation of decorative flourishes. In the second group (alterations of handwriting by simplification) there are many methods of proceeding, from the simplification of individual letters or the suppression of commencing or finishing strokes or loops, to the artificial script employing all conceivable simplified forms. If the simplification has been carried very far, then the comparison can be quite difficult, because in this case the individual strokes more or less disappear. In the discussion of printed scripts we shall treat of the way by which even here one can obtain a glance behind the disguising facade. The establishment that the factual script has been produced by means of enrichment or simplification nevertheless does not warrant the conclusion that the script of the forger must also be simplified or enriched. In accordance with experience, the handwriting disguiser often has the tendency of making his disguised handwriting as dissimilar as possible to his true handwriting. It can be quite the reverse with his undisguised hand. However, as a rule, upon careful examination, faux pas become apparent, for it is just in such cases of the inversion of a peculiarity that the psychical compulsion of the forger is too great for the latter to carry on for a longer period. In general one will also

be able to reckon that imaginative handwriting disguisers will tend more toward enrichment, be it through flourishes or other additions, or through increasing the size of loops, or toward other enlargement, since this type of disguising appears easiest to them. On the other hand, temperate and strong-willed handwriting disguisers will tend more toward abstract forms, e. g., printed letters. In the case of copied handwritings it will be difficult for the imagination-conditioned forger to match exactly a simple, thin form which has been patterned purely on the abstract. On the other hand, the strongly temperate person will not find it easy to master the many enrichment strokes or the abundance of an imagination-conditioned script. Deviations from the genuine script -- in the case of the one, due to enrichment, in another, due to simplification -- will repeatedly occur, making clear the existence of the falsification and affording indications on the person of the forger.

As for the degree of pronouncedness, i. e., the question as to whether the forms appear in general strong and fast, or whether they are indefinite and vague, it has already many times been pointed out that in the case of falsifications the disguising as well as the copying forms are strongly pronounced. There are two reasons for this. For one thing, again playing a role here is the stronger stiffening which is invariably perceptible in the case of artificial production of scripts, for such leads to the more uniform formation of script. But above all effecting the pronouncedness of clearer and sharper forms is the endeavor of the disguiser to produce forms as dissimilar as possible to those of his own hand, and the conscious will of the copier to produce forms

as similar as possible to those of the script copied. Here, in their phenomenal forms, the unconscious and the conscious often overlap indistinguishably. Thus, as a rule in the case of factual scripts we have a strong pronouncedness of forms with which to deal. Reference might here be made to the basic principle that a falsification usually occurs more in the sense of a constriction, and such is also the state of binding. Thus, in factual scripts we shall seldom find a mobility of form, i. e., a relaxedness of form, but rather a tendency toward rigidity of form, and such rigidity as can come in all cases from the direct or indirect influences of the falsification. However, an otherwise form-mobile script will reveal itself as such in disguises or in copies through reversions or deviations from the genuine script. Thus, this distinction also has its importance for the comparison of handwriting. It has already been mentioned that writers of indefinitely and unclearly formed scripts find it easier to select a disguising style or to adjust themselves to the most diverse scripts in copying.

However, of still greater importance for the comparison of factual script and suspected script are such characteristics which can be regarded as phenomenal forms of a certain destruction of form. Here we are less concerned with a full destruction or dissolution of forms, for the writer of such a script will be capable of neither an efficaciously-camouflaging disguise nor a convincing copy. It is here more a question of partial fractures or breakings of forms, analogously to the way in which we found them above in the case of the stroke in the disturbances of stroke. Hereby, it is a question not only of "pathological" characteristics, giving attention to which is sometimes recommended, for these script phenomena are by no means always the signs of mental or bodily diseases. Such

disturbances in the expression of form can occur, for example, in a breaking apart of a letter form, as in the middle of a downstroke, or in a breaking of formative strokes, as in the drawing of a loop, or in cessation or interruptions of formative strokes, or in a complete atrophy of letter constituents, as in lower strokes. Often it will be difficult to differentiate between them and disturbances of movement or of stroke. But neither is this necessary, for they all have in common the fact that almost invariably they escape the attention of the consciousness and the free will of the forger, and that for the most part they originate from physical -- or at least very deeply-lying psychical -- strata, or can be traced to hygienic disturbances. Their similar occurrence in the factual script, as well as in the script subject to identification, is one of the most secure indications of the personal identity of the writer of both pieces of writing, for in the case of disguises they can be suppressed not at all or only difficultly, while in the case of copies they can scarcely ever be imitated exactly. But here also one should proceed with great care in establishing them. There are also disturbances of a purely technical nature which are circumstantially-conditioned, e. g., a scratching of the pen, a slipping, or the like may leave behind traces which in a superficial examination might be confused with the afore-mentioned deeply-based disturbances. Some practice, however, usually permits an easy determination or establishment by means of tests as to whether a poor pen or an unclever slipping can leave behind such traces. Closer observation of the state of such phenomena as cannot be considered "incidental" disturbances but are important for the comparison process must be carried out on an exacting basis under the magnifying glass in order that such differently-conditioned but perhaps outwardly-similar characteristics

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not be erroneously considered as in concordance. Psychologically, they can be conditioned through nervousness, through the failure of the force of will, lacking contact capability, or the like. Physiologically, they can be conditioned by a particular manner of holding the pen or the functioning of the muscles participating in the act of writing. Their occurrence in the factual script alone -- each in accordance to its type -- could also come from strong stiffening. The lacking of such in the script subject to identification can thus be utilized directly against the identity.

From the totality of form we come to the individual forms. Here, in accordance with what has been said above in regard to comparative forms, we shall not proceed as usual, i. e., only from letters as such, but shall first observe the forms quite independently of their belonging to specific letters, since letter constituents are also to be regarded as independent comparative forms and, therefore, as special comparative characteristics. Hereby, we also give attention above all to the formative strokes which have led to the pronouncedness of these forms, since neither in regard to formation should it be forgotten that we pursue a dynamic -- not merely a static -- graphology.

We have already spoken of downstrokes and upstrokes as entities of small letters in the treatment of downstrokes and upstrokes with respect to the writing movement. Therefore, it is not necessary that we discuss them further in the treatment of formation. Rather, we can refer to that which has been stated above. From the standpoint of forms it is here a question above all of their forward or rearward curving, as well as of whether they are formed as a soft curve or as a point above or below. In

this connection a supplementary indication might be made of an often very characteristic phenomenon which is not infrequently to be found, viz., the so-called "shark tooth." Thereby is understood the formative peculiarity whereby the upper angles, e. g., in the m, n, u, are formed like projecting peaks as those of a saw. Such are particularly conspicuous when the following downstrokes and upstrokes cover a considerable interval so that the so-called curtailed secondary direction results. In regard to the above-discussed serpentine lines of downstrokes it might be added that such are often again to be found in other formations, e. g., in cross strokes or strike-overs as in the case of the "t" or the latin-style "F" or similar forms, as well as in dashes or cancellations of letters in corrections. Above all, as has already been emphasized, all these peculiarities of form must be brought wherever possible into a greater interconnection, if one is to comprehend in its peculiarity the actual essence of the individual script in question.

In addition to downstrokes, loops are the most important letter constituents for the comparison of form for in such can be observed an unending source of important material for identification purposes. We differentiate between upper loops, as in the "b," intermediate loops, as in the "o," and lower loops, as in the lower part of the "g." In regard to the foregoing, exacting observation should be made as to how they are drawn above and below, since here the most diverse formations can be in evidence. Thus, many upper loops appear somewhat flattened out, which according to our experience often occurs in the case of childish or primitive persons. Here it is a question of a type of formation which most certainly occurs below the threshold of the consciousness and which will be

in evidence repeatedly in the case of disguises or copiers. It is a like matter with the inverse case in that the upper part of the upper loop forms to the right or left the light suggestion of a curve, if, for example, the up-and-around drawing occurred in the presence of the overcoming of a certain inhibition, or if a peak develops instead of an upper curve. In the case of lower loops in below-and-around drawing, quite corresponding differences are to be observed. In regard to their width or narrowness the formation of loops finds its basis more in the conscious control or free will of the forger. The above-established basic principle, i. e., that it is easier to radically suppress all loops rather than individual loops, applies here. Many handwriting disguises tend toward an exaggeration of loops through upward or outward inflation. Their artificiality is easily recognized. (See Figure I above.) Leaving the foregoing out of consideration, loops, in regard to width, can be formed quite diversely. In the case of many upper loops, to the right in the upward line a slight bend in the form of a soft curve can be observed. A corresponding occurrence can be in evidence to the left in lower loops which not infrequently assume a triangular form, which popular graphology referred to as a tendency toward domestic tyranny (ibid.). Lower loops can also be flattened or sharp, in this case of course at the lower end. In the main, the observation of loops is very essential for the establishment of the difference between round and angular scripts which is so important. Also especially often and clearly to be found in loops are wavering strokes, faux pas of movement, and disturbances of stroke. Many writers, for example, are not capable of drawing below and around lower loops uninterruptedly, so that such loops remain open below. Many people do not draw through their

lower loops, so that to the left a kind of hook or "sack" which is open above remains suspended. The most exacting attention should also be given the form of such hooks, since very often they are very characteristic. Also of great importance is the situation of loops in relation to the remaining word entity. Thus, many upper loops trend forward or rearward in relation to the mid-range. Likewise, many lower loops shrink back, as it were, in relation to small letters, while others trend forward. The latter is usually then bound with a light deviation of the downstroke of the loop rightward. (Example of the former: Figure III, left above; example of the latter: Figure II, above.) It is also important to observe where the loop ends. We have already mentioned that many lower loops are not drawn through to the upper part. But these must not invariably remain suspended as hooks; sometimes they are drawn outward to the right in the lower zone. The loops become smaller or larger in accordance with whether this occurs further below or further above. The same holds true for upper loops. They can also be drawn through far above and rightward, as in the loops of the German-style "d" (Figure VI, below: "sind"), or they can reach downward to the line (Figure III, above left). Accordingly, as such, they will be smaller or larger. Also of importance is whether -- and if so, how -- the loops are connected with the next letter. Many writers suppress their lower loops, drawing the connecting line at once from the lower end rightward, rather than first drawing around and leftward a loop. Thus, many more peculiarities can be enumerated which can be found in loops, e. g., the not infrequent phenomenon that the upstroke of the lower loop courses serpentine upward, thus tonguing upward, so to speak. It is our intention, however, to conclude this representation, in order not to become

too broad. Only in the case of the so-called mid-range loops, e. g., o, a, g, d, the latter three written Latin-style, is it to be stressed that here above all important is the ascertainment as to whether they are lengthily-drawn or roundly formed upward or side-ward, whether they are closed at the top and, in the case of the "o," with or without a point or open, be it above or to one side, and whether they are provided with rolling movements which often occur especially in the case of the "a" and "g."

At any rate this enumeration will have shown that the examination of loops with respect to concordance or nonconcordance in the factual script and the script subject to identification offers extraordinarily great possibilities for finding hereby the most important and indicative comparative characteristics. Therefore, giving them exacting attention cannot often enough be recommended to the handwriting expert, the more so since it is here for the most part a question of handwriting characteristics whose development can be traced to deeply-based writing impulses or extremely fast-ingrained writing habits.

It would of course be short-sighted to enumerate only the most important comparative characteristics which are to be found in the unending domain of script forms. Here, it might be said that there are as many forms as there are writers. (Quite amusing are the calculations which Crepieux-Jamin advances in his basic principles on the variational possibilities of letter form (German edition, page 50 f. He reaches astronomical figures.) Now that we have in the main observed the script forms which are to be found in letters, e. g., upstrokes and downstrokes, connecting forms and loops, we shall now restrict ourselves to individual letters, in order to bring some order to the abundance of phenomena. For it is in individual letters that form above all takes an active, if not an exhaustive, part. We shall see which comparative forms, disregarding

the total form of the letter, can be found in them as particularly important. This we shall do, fully aware that it is never possible to exhaust completely the abundance of forms.

We begin with the small letters which are above all important for the comparison of handwriting, taking into consideration those written both Latin-style and German-style, if formwise they are differentiable to a considerable extent.

The letters n, m, u, i, and the German-style c are in need of no further discussion, since their form was sufficiently characterized in the discussion of connecting forms, upstrokes and downstrokes, roundness and angulation, conditions of size, situation, and breadth, and since their form is characterized in their differentiable phenomenal forms. The foregoing of course does not apply to the upper marks in the case of "i" and "u," which we shall discuss later. In the case of the Latin-style "a" above all important is the manner in which its loop is connected with the other letters; whether this loop manifests connectedness through an inwardly-rolling movement (example: Figure II, lower specimen, line 1; in this script one sees inwardly-rolled a "d" and a "g.") Further, whether the loop has begun without a commencing stroke or manifests a commencing stroke, and whether this is straight or round is important. In the latter case often occurring to the left is a kind of small tail when the commencing stroke has been drawn through the loop as a rolling movement. It is further of importance to determine whether the downstroke following the loop begins above or below the top of the loop. In the case of the German-style "a" one should give attention above all to the so-called bridging stroke, i. e., the connection between the second upstroke and the last downstroke. This connection can be horizontal,

upward, or downward. A point may or may not be formed after the first upstroke before the bridging stroke or as a transition to the latter. This in turn can be thick or thin or it can be formed like a small loop which in turn can be drawn high or flattened. In the case of the "b" attention should be given as to whether it is round or angular on the base below, and whether the letter ends with a point or cross-stroke, or whether a rearward curve instead appears, which in turn can be brought into connection with general angulation and roundness and with tendency toward rightward or leftward trend. In the case of the German-style "d" attention should above all be given the finishing-stroke hook in accordance with size, curvedness, and situation and proximity to the following letter, e. g., the "h." Often to be found in the drawing of loops in the case of the German-style "d" is a rearward trend, a kind of shrinking back, as it were (example: Figure III, specimen left above, line 5: "und"), often called a loop of sensitiveness by interpreters. Especially here are the afore-mentioned differences as to length, width, and size of loops to be given attention. Many loops are not drawn through, many swing rearward. But here also the interconnection with other writing tendencies is obvious. That which has been stated in regard to the "a" also holds true in the case of the Latin-style "d" with respect to the loop, as it does for the size of the downstroke to the right of the loop. Instead of a downstroke, an upstroke drawn first leftward and then rightward like a pennon can form the end of the letter (Example: Figure III, line 7 at the end.) In the case of the Latin "e" the most important part is the small loop which can be round, oval, or broken in movement, this perhaps due to a repeated downward drawing after its upstroke, instead of a direct swinging about toward the loop (Figure

III, right, line 5: "diesmal"). In turn, the German-style "e" is important for the question of the angulation and roundness of handwriting; the narrowness or width of the letter is further to be given attention. But above all important is the connection between both downstrokes. Existing in many scripts is a gap which divides letters into two halves (ibid., line 7). The connecting stroke can commence above or far below; it can course straightly or curvedly. The "f" is to be compared in accordance with the direction of the swinging about in the drawing of loops and, further, in accordance with the type of its connection with the next letter, which connection can occur through a point or small loop or directly through a small stroke. The German-style "f," which according to the model has no loop below, but rather a club-shaped, thickened downstroke, in this place represents a place of discovery for recommenced hooks, as well as for a diversity of downstrokes in accordance with direction of movement and distribution of pressure, just as the long "s," "p," "q." That which was stated in regard to the "a" and "d" holds true for the Latin-style "g" with respect to the loop. That which was stated in regard to the German-style "a" and the bridging stroke applies to the German-style "g." The downstroke to the lower loop of the "g" is frequently somewhat bent outward toward the right, which of course can be of importance as a primary movement stroke for the comparison process and can be brought into connection with general writing tendencies, e. g., with the downstroke tending toward deepening, rightward trend, winding movement. The most important aspect of the Latin-style "h" for the comparison process is its final downstroke. This can end on, above, or below the line; it can be formed like a club, a leftward-coursing claw, or it can be curved downward and rightward in a serpentine line. In the case of the long

German-style "h" the interconnection of both loops in relation to width and length should be given attention, as well as the long downstroke which often assumes a serpentine form (Figure I, signature in lower specimen) but which can also be drawn quite straightly downward. In the case of the "k" the most important aspect is the right part of the letter. In the case of the German-style "k" the right part can be curtailed as a mere downstroke without a loop. Sometimes it is inwardly-rolled. The loop can be inflated, very small, or otherwise formed in a specific manner. Not infrequently it occurs in the case of both "k's" that the right part is not connected with the left, but is separated therefrom by a small gap which is often only recognizable by means of a magnifying glass (Figure III, left below, line 6). In the case of this letter the type of its connection with the next letter is also of importance. The "l" is little expressive; here all that which has been said in regard to the upper loop is applicable. Rightward swing on the base can reveal a tendency toward angulation. In the case of the "o", as has already been mentioned, it is particularly important to ascertain whether it is open or closed above and the manner in which the closure has occurred: whether through a point which for its part can be applied above on the loop, or to the right beside the loop and then further above or further below, and which can be thick or fine, or whether through a loop which can be round or oval and can be found above on the loop or to the right beside it. The closure also sometimes occurs through an inward knotting or rolling, which moreover can be found in all mid-range loops. The form of the loop, whether it is elliptic above or drawn rightward or round, is of course also very important. The Latin-style "p" is expressive above all in its right part, for example,

whether it stands with its downstroke on the line or is suspended downward or upward, or whether it is swung under rightward or leads club-shaped to the left, similarly to the "h." In the case of the German-style "p" the size and form of the small loop toward the right is in turn of particular importance. This small loop can be small or large, round or lengthened, curtailed or inflated. Due to the loop, that which has been said of the German- and Latin-style "a" should be given attention in the case of the "q." In the case of the German-style "q" the observations on the bridging stroke in regard to the German-style "a" should be given attention. That which has been said in regard to the German-style "r" applies to the downstroke. In turn, the "r" has great possibilities of variation and, therewith, possibilities for comparison. In the case of the German form the bridging stroke below on the line between the left and the right halves of the letter can have a quite diverse direction and form, e. g., it can be curved, dash-shaped, horizontal, or it can be directed downward or upward. It is also important to determine whether the left point of the letter is higher, or lower, or equal in height to that of the right. The Latin-style "r" can deviate from the school copy in that the upstroke following the arcade may not run to the right and alongside or in advance in the downstroke, but left of it, so that a small ring develops which can be broad or narrow, long or short -- a phenomenon which will indicate a general tendency toward the formation of loops. The cross-stroke pennon to the right above can likewise be quite expressive. Here there are swordlike, daggerlike, bannerlike, clubshaped, outward-swinging or rearward-trending, hesitant or aggressive forms. (Cf., for example, Figure III, right, lines 8 and 9, in contrast to the script left below.) The pennon can be used for connection with the next letter or it can extend upward, which can occur dashlike or

with a point. The Latin-style "r" can also be formed with upstroke and downstroke and a bridging stroke above and between. Applicable here is the afore-mentioned (example: Figure II, lower specimen). As a long letter, the German-style "s" is often important for the question as to the centripetency or centrifugence of the entire script; in its length below and above it is important for the ratio of the length of upper and lower strokes; its downstroke is important for the situation of lower strokes and as a source of discovery for recommencement hooks. Here, the following should also be given attention: In writing further, does the connection with the next letter occur directly below the end of the downstroke or above on the line? The Latin-style "s" is expressive in its right part inasmuch as it can be determined herefrom, in addition to its size which is often conspicuous in relation to the remaining script, whether the right part of the letter is drawn out toward the right or whether it leans strongly on the remaining letters. Further determinable is the curve in which it runs, whether it has a point at the end or a claw, whether the cross-stroke is suspended above or below, and so on. In the case of the German ^B [ss], of principal importance is the size, width, and form of the small "rucksack" on the right. Through a small loop above, which is not in conformity with the writing model, instead of the provided-for cover stroke or upstroke and downstroke, the "t" can reveal a tendency toward fullness and the formation of loops; inversely, through a sharp point, it can reveal the tendency toward sharpness and sparseness. Particularly important in the case of the "t" is the type of its connection with the next letter and the form of the commencement. The latter can be a dot, a loop from above or below and around, or a stroke (cf. Figure III, right, lines 3 and 5), which in turn, along with the downstroke of the letter, can form the most

diverse figures (e. g., Figure II, below, line 2: dot; line 3: stroke; line 5: the second "t" with direct connection; signature: loop). Likewise often very expressive is the cross-stroke above in the Latin-style "t," which for the most part arises from a very primary movement stroke. It can be straight; it can form a curved, arcadelike, or a hollowed, festoonlike curve; or it can run threadlike, for the most part in correspondence with the form of connection. It can occur above or below or in the middle of the letter. Each in accordance with its length to the right of the letter, they can shrink back hesitantly, so to speak, or reach out aggressively. The "v" and "w" of both handwriting systems can often be distinguished from those of the school copy principally in that the right part is somewhat higher than the left. In particular in the case of German-style writing of arcade-shaped loops to the right this is often the case. That which has been said in regard to the German-style "r" applies to the bridging stroke on the base. Occurring so seldom as letters are the "x" and "y" that they are usually written only in school practice, thus offering nothing for the comparison process. In the case of the German-style "z," consideration should principally be given to the situation and size ratio of the curve above the line and the loop below the line. Sometimes the curve is suspended leftward and slanting; the form and width of the small mid-range loop is also significant. The Latin-style "z" sometimes manifests the same peculiarity of the leftward suspension of the upper part. Here important in turn is the cross-stroke in these letters; also applicable here is that which has been stated in regard to the cross-stroke of the "t."

We have already mentioned several times that, in relation to small letters, the large letters or majuscules are of lesser indicative

value in the comparison of handwriting. The reason for this is principally that every writer is accustomed to forming his large letters more or less consciously. Therefore, he places top value upon them in the disguising of his handwriting. Moreover, his formative compulsion and, above all, his conscious formative will take an especially active part in producing them. He will thus alter them as strongly as possible in relation to his own. This is the deeperlying reason for the conspicuousness of majuscles, which has previously been emphasized, and for the direction of the attention of the forger upon them. In copying, since he is accustomed to their conscious formation, he is more likely to succeed in matching the foreign forms in the case of large letters than he is in the case of small letters, the writing of which in his own script occurs more or less automatically. Therefore, in the comparison of majuscles, one will first proceed with the script subject to identification, i. e., with respect to the disguise of the suspected script, and the copying of the doubtless genuine script. From this point one will attempt to establish whether, in accordance with the general writing tendencies and habits of the suspect, the deviations in the factual script -- above all, distorting additions or simplifications -- could have issued forth from him; and likewise in the case of copies, whether they could have come from the creator of the genuine script.

To discuss each individual large letter would lead too far. This would also have little sense, since here the possibilities of variation are extremely numerous, and concordances or deviations of majuscles alone could scarcely be decisive. (One need only observe the several hundreds of diverse forms of the "m" compressed in a few illustrations by Crepieux-Jamin, loc. cit.) Only a few which

are especially elucidative and thus important for the comparison process will be here advanced. For example, the Latin-style "A" is usually quite significant for the indicative difference between round or angular script. It is a like matter with the "J." The "D" affords opportunity for the observance of rearward trend in handwriting. A letter which is capable of expression and variation is the "M"; here especially worthy of note is the height of the individual points or arcades in relation to each other. (Pulver, loc. cit., has dedicated a special observation to the "M" and has gained much interpretation material therefrom.) Likewise, the tendency toward simplification or enrichment is here easily established, just as is the tendency toward extension or compression which also appears quite characteristic in the case of the other majuscles, e. g., the "H." The "W" sometimes manifests a very characteristic crossing of inner strokes, like two crossed swords. In the case of the "T" and "F" the over-striking is important; in the case of the Latin-style "Z" the cross-striking, as well as the question of angulation or roundness, is important. A usually quite characteristic letter is the "E," above all the German-style "E." In the case of this letter often to be found are quite peculiar swinging lines or curves, loops and small loops, and these are to be found in the upper zone, the mid-zone, and especially in the lower zone. Thus, if, as is usually the case, this letter is written in three stories, so to speak, then of course the position and size of the three parts in their interrelationship are, under certain circumstances, quite characteristic.

German-style majuscles are often letters with long lines. Here the long downstrokes are invariably worthy of note, above all in their direction of movement. In the case of those which have

loops above and below, e. g., the German-style "H," the inter-relationship of size, position, and width of these loops is important for the comparison process. However, in the case of all large letters the most exacting attention should be given their applied extensions, enrichments, ornamentations, fancy flourishes, swinging commencing strokes, final flourishes, or inner decorations. Here, one should always make an examination as to whether in the writing movement they have organically united, so to speak, with the letter, or whether they have been artificially attached or added through individual movements, thereby arousing the suspicion that they are conscious productions. Accordingly, they should be used in the comparison process. In the case of copies, deviations in this respect from the genuine script will always appear extremely suspicious. If enrichments can be regarded as artificial, then one should examine them to ascertain to which genuine writing tendencies of the hand of the falsifier they might correspond, in accordance with the type and manner of their insertion, with the movement of their writing stroke, and with their form. One should further ascertain whether these peculiarities of writing are also to be found in the hand of the suspect.

Large letters have particular significance for the comparison process if the factual script has been completed with printed letters or others similar to typed letters in an imposingly-extensive decorative script, be it for the purpose of disguise, be it because the script being copied is so formed. In the case of such factual scripts individual characteristics are entirely or partially omitted in the comparison process, e. g., the form of connection; the type of connectedness; often the position as well, since such letters are usually placed uniformly vertically; the formation of

lower strokes and individual loops; etc. All this of course renders difficult the task of the comparer; however, sufficient clues remain for him. Here it should next be pointed out that in most cases the letters of such scripts are formed more or less in dependence on the other Latin-style majuscles. Thus, in these cases one will so proceed that one first seeks out these large letters from the unaffected scripts subject to identification, comparing them with those of the factual script.

Hereby especially important of course is the comparative specimen of the suspect made in block script or otherwise corresponding script, and such a specimen is here invariably unconditionally required. Of course particular attention is necessary in the taking of the specimen, since here a disguise of form by the suspect himself during the dictation is relatively easy.

In the case of such factual scripts as are completed by means of an artificial script, in general not too much is obtainable with a comparison of form, at least not with such alone. Therefore, here special attention should be directed toward the places in which the falsifier has reverted to his cursive script, which according to our experience occurs almost invariably at least once in the case of longer factual scripts. (Cf. Figure III and Appendix C.) In such reversions one then usually has before one the genuine script of the disguiser or copier, or at least one so little altered that it is directly suitable for the comparison process. Disregarding the foregoing, in such artificial scripts above all the rhythms which also here are never entirely suppressible should be given attention, particularly the rhythms and proportions of size, width, and pressure. Examples are the appearance of pressure in horizontal cross-lines of a

block-formed factual script, and displacement of pressure in cursive scripts subject to identification. As always, so it is here important that exact comparison be made of the general outer and inner distribution of space, i. e., intervals, margins, the course of lines. Here also inserted or recommenced small hooks cannot infrequently be established. If it is possible to comprehend such general comparative characteristics, then identification is just as possible as in the case of cursive scripts.

The form can here also yield important clues, inasmuch as the type and manner can render conclusions as to the manner in which the formative strokes have been executed and conform to each other, i. e., how the blocks have been placed together and interconnected, so to speak. Thus, in the one script they are placed broadly and weightily, while in others they are sloping, perhaps in such manner that they appear to tumble over, or they may stand sharply on the base. Thereby, it depends on the direction of the downstrokes. These can run more together below or separate; they can meet to the right on the side in the afore-mentioned lengthening, or they can be separated, or even cross. Every downstroke or horizontal stroke can consist of individual parts, can be drawn in one stroke, and so on. Of course here the conditions of pressure are very important. The strokes, i. e., the edges of the blocks, so to speak, can thicken or taper daggerlike. Inner strokes can be drawn finely or coarsely, thus differing, so to speak, from the outer wall. Likewise, the observation as to whether the artificial script system is uniformly maintained or alternates can indicate much.

As always, so is it here to a particular degree important that the peculiarities found be brought into connection and compared

with the general movement and formation tendencies of the script subject to comparison. Not infrequently, quite astonishing concordances or discrepancies manifest themselves. It can thus be seen, even in the case of the comparison of such difficult scripts which are especially artificially formed by the forger, that the careful and practiced handwriting expert still has very many possibilities for success and need not throw up his hands in despair at the thought of them.

With respect to formation in general, and the formation of letters in particular, a very important observation should be added. Not only the writing of letters or of letter constituents, but also the unconscious omission of such, can be very characteristic for a script. Examples hereof are the occasional omission of dots over "i's," the omission of individual curves in the case of the "m," the writing of the "i" by merely placing the dot without the body of the letter, and the like. Such phenomena are then particularly important when they are not expressive of a dissolution of form, but are peculiarities of the writer. It is a like matter with the habit of many writers of erroneously using one letter in place of another. All these peculiarities -- indeed, not unjustifiably -- are interpretively appraised as deceitful characteristics.

Letter constituents can also be those separated from but belonging to the letter, e. g., above all, upper signs. These must invariably be observed and compared from a twofold point of view: (1) in accordance with their position in relation to the parent letter; (2) in accordance with their form, as such. With respect to their position, they can be placed exactly or inexactlly,

speaking in general. In the case of disguises one will more frequently find an exact position, since every artificial production tends toward increased regularity. In the case of copies, an inexactness herein not infrequently will reveal the falsification and, under certain circumstances, the forger as well, if such is characteristic. The dot of an "i" is said to be placed exactly when it lies on the line which is obtained when one lengthens upward the downstroke of the letter. Thereby, consideration should be given the trend of curvature of the letter. In the case of rightward trend the dot of the "i" will lie more to the right than in the case of vertical or leftward trend. U-curves and v strokes [diacritics placed above these letters] placed exactly are found between both downstrokes of the "u"; the double strokes of the z and v are found exactly above the loops of the letters. With respect to their position, upper signs are to be examined as to whether they lie deeply or high, i. e., whether they lie only little distant or considerably distant from the letter, whether they hasten forward or shrink back, so to speak, i. e., whether they are placed to the right or left of the lengthened line of the downstroke of their parent letter or the middle of both downstrokes or the loop. Of course also expressed therein will usually be general writing tendencies, e. g., rightward or leftward trend, often speed or slowness in the production of script, elevation or depression, exactness or inconstancy. A connection of the i-dot or the u-curve with the next letter will occur only in the case of little-disguised scripts or, in the case of copied script, only in poorly executed imitations. Especially important is consideration of the position of both double strokes in relation to each other. Such can be quite diverse. Both strokes can be connected, run

parallelly, or separate in an upward or downward direction. They can be set closely together or far apart; the one can stand lower than the other. A very important distinction in the placing of upper signs consists in whether such are placed immediately after the letter or after the word or syllable. Due to its importance, we repeat here this point which has already been made in the discussion of connectedness.

As far as the form of upper signs is concerned, the greatest possibilities for variation in this respect are manifest in the case of the i-dot. Application of the magnifying glass is invariably required for the exacting examination of these distinctions. The i-dot can be fine or coarse, circular, or shaped in the form of a small crescent open to the left or right. It can represent a stroke leftward and below or rightward and below; this can be thickened or tapered below. The i-dot can also appear as a minute, horizontal hook or one drawn toward the right or left. All dash-shaped i-dots can be quite short or relatively long. (Of., for example, the various i-dots in Figure III.) That these diversities will often be connected with general movement tendencies is of course in need of no further elaboration. The placing and formation of the i-dot occurs entirely outside the consciousness; even in the case of the copying of foreign scripts this is scarcely ever given attention. Therefore, this is of very great indicative value for the comparison process.

Less manifold, but still great, are the formation possibilities in the case of the u-curve. Above all to be given consideration in this case is the fact that such is entirely lacking in the Latin-style school copy. Therefore, its occurrence in a factual script written Latin-style can indicate a German-style script on

the part of the forger. However, this is not an infallible indication, since very many Latin-style writers employ the u-curve, be it for aesthetic reasons or for the sake of clarity. The u-curve can be dash-shaped, usually corresponding to a general line stroke, or cup-shaped like a festoon, or curved like the bend of an arcade. With respect to direction, it can be strongly drawn out or swung out toward the right or drawn rearward to the left. It can also reach downward, following a strong downward stroke. It can be long or short or curtailed into a dot formation; it can be drawn energetically and tensely, or slackly and hesitantly, or inhibitably. (Examples of various u-curves can be seen in Figures III and VI.) All these distinctions can be explained from a movement or characterological point of view. It is here a matter similar to that of the end strokes of words with which letter they can be brought into connection. The amount of pressure exerted in the u-curve should also be given attention. The u-curve can be strongly or weakly impressed, and the pressure can be in evidence at the beginning, middle, or end. Under certain circumstances, all this is of great importance. Of course, in accordance with our experience, it should be mentioned that the formation of the u-curve is more subject to the consciousness and the free will of the falsifier than is the formation of the i-dot, at least as far as total formation is concerned. And naturally the fine details are much less thusly subject; these details -- in all their nuances -- must be given attention. Here, in the case of arbitrary alteration of form, re-versions occur very frequently.

With respect to both i-dots and u-curves it might be mentioned in addition that here one finds a field for the seeking out of so-called inconsistencies. Here, we have always attempted

to bring placement and formation into connection with movement tendencies. But it can just as well occur that these are in contradiction, without this contradiction being caused by the falsification. Such an inconsistency occurring in concordance in the factual script and the suspected script is of course a very solid indication for the identity of the writer.

The double strokes [diacritics] above the ä, ö, and ü can also have very diverse forms. They can be long or short, up or curtailed into a dot shape; they can be drawn curvedly or straightly toward the left or toward the right. Analogously to the case of the u-curve, their conditions of pressure can be quite diverse. Likewise, in the case of their formation, as well as their position, attention should above all be given the relationship between both. Very frequently the first or the second stroke, in relation to the other, is in some manner especially stressed, be it through length or pressure. All these distinctions very easily escape the attention of the forger, and easily creep out of his natural script, so to speak, into the disguised script. In the case of copies, in many cases they are overlooked by the copier. According to our experience, the double strokes are most often influenced by the falsification in the sense of regularity, be it through the free will of the falsifier, be it through the influences of stiffening.

In concluding the discussion of letters and letter constituents, it might briefly be mentioned that there are also letter groups which represent a specific total form, so to speak, in many cases being written like a single letter. These should be considered and compared as such. Here, there are forms in the case of which the individual letters are connected by abbreviated strokes, so that so-called ligatures arise, often of very individual stamp. These

phenomena occur frequently in final syllables, e. g., "-er," "-en," or in such letter connections which also belong together in speaking, e. g., "ch," "sch," "dt," and similar connected forms. In disguised factual scripts such ligatures will occur less frequently, since their peculiarity in the true hand of the falsifier will usually be conspicuous to him and they contradict the regularity of the artificial script, as thereby the more exact pronouncedness of form is not favorable for the formation of individual forms. In the case of imitations, on the other hand, such ligatures will usually form a rocky cliff for the falsifier against which his art of imitation will be shattered, because they are of course for the most part only difficultly copied in an exact and credible manner. All the above-named letter connections, with respect to size, position, execution of line, etc., must be considered a unit and must be compared as such. For example, it often occurs that the connection "er" or "en," as such, rises over the line or descends below, or is written smaller, perhaps sometimes even larger, than the remaining body of the word. Or it may occur that the individual letters can no longer be recognized at all. In the case of "ch," "sch," "dt," etc., of principal importance is the inter-relationship of the individual letters of the group. Very often they are compressed more closely together than the other letters. In the case of the "sch" written German-style, for example, as a rule the lower stroke of the "s" is longer than that of the "h," or vice versa. But here the upper strokes can be of diverse length, the three letters can trend toward each other, and so on. In the case of the "ch" it is often very characteristic how the "c" clings or attaches itself to the "h." We have already mentioned a part of these phenomena in the discussion of individual letters. Thus, with respect to all these phenomena, it is a question of recognizing

the extent to which the individual characteristics, such as size, width, position, are hereby altered so that here a union or grouping of letters results. Since thereby they distinguish themselves from the remaining script totality, they could be placed under the concept of inconsistencies coined by Klages.

In addition to the comparison of letters and the characteristics inherent in them, one should not forget ciphers or numerals, which often play a great role in the forensic practice, e. g., in very many falsifications carried out by means of alterations or additions. As are letters, so ciphers are script forms which are prescribed in the writing model and alterable by individual strokes and forms. Here, of course, in accordance with our experience, it should be mentioned that usually the formative forces take a much less active part in ciphers than in letters. Perhaps the reason for this is that most people write fewer ciphers than letters in their lifetime; perhaps it can also be connected with the striving for clarity which is especially in evidence in ciphers. At any rate, there are quite characteristic cipher forms, and in many forensic cases it depends strictly upon the genuineness of ciphers -- cases which of course have become rarer since it has generally become customary and prescribed on forms that ciphers are also to be spelled out in checks, bills of exchange, and similar documents, as well as in promissory notes, receipts, and contracts. In addition to being found in monetary figures, ciphers are also to be found in dates, house numbers, in addresses and the data of senders. In the case of wills, dates can be particularly important, but their importance has recently of course been decreased through the relaxation of the strict rules with respect to format. In

general, that which has been stated with respect to the comparison of letters holds true for the comparison of ciphers. Here also it is less a question of a similarity of the total form than it is of the characteristic movement and formative strokes and the individual forms perceptible in them.

Singularly, with respect to ciphers, the following might briefly be advanced. The so-called Roman numerals, with which many writers designate months, are only little expressive; at best they can be grouped together with Latin-style majuscles or printed letters. Likewise, in the comparison of them, one will have to proceed accordingly by examining the composition of blocks and the direction of strokes and, wherever possible, the conditions of size, position, and width. As far as German-style ciphers in general are concerned, that which has been stressed with respect to letters holds true for many details. For example, the null or zero corresponds exactly to the "o"; therefore, that which has been stated with respect to this letter applies here. The cipher 1 can be written as a small upstroke with a long downstroke with or without a point above, or it can be written as a mere downstroke, which should be given attention in the comparison process. It resembles the German long "s" [7]. Also playing a role in the case of the cipher 1 is the length of upstroke and downstroke, in particular their interrelationship. With respect to position and condition, that which was stated in regard to the i-dot applies to the point. In the case of the 6 and the 9, the relationship of loop and stroke and their interrelation are important. In the case of the 8, in which two loops are found, their interrelationship is in turn important, as is their trend of curvature in relation to each other. Further of importance is the condition of loops, as it is in the case of letter

loops. Where, in the case of a cipher, several small curves are found, as in the 3, 5, and 2, their interrelationship is of importance. In the case of the 5, the formation of the pennon to the right above is important. The 7 can be written quite diversely. For example, a point, small loop, or stroke can appear in the center or below the center of the downstroke. But the downstroke can also course smoothly without such. The point, small loop, or stroke can in turn be formed quite diversely, just as the swinging curve above to the left. The 4 is quite expressive, since here a small lattice of two downstrokes and one cross-stroke is in evidence. This lattice can be open or closed at the top; the cross-stroke may or may not be drawn through the long downstroke; the strokes can be straight or curved. Often to be found here are also serpentine lines. Likewise in the case of the 2 not infrequently to be found are individually-shaped forms. To be examined in addition to the small curve above is principally the pennon on the base, in particular with respect to swing and direction. In the case of multi-digit figures it also depends on the breadth of the writing. Also a very characteristic distinction is whether several interconnected ciphers are written together or apart. In the case of interconnective writing, one will be able to conclude generally a strong compulsion toward uniformity in the script of this writer. Observation as to whether the ciphers, in relation to the text, are strongly emphasized can also be of importance. It is known to the graphologist that people who do much work with ciphers, in the case of which computation plays a great role, often unintentionally overemphasize the ciphers and that many of their letters can assume a cipher form.

In concluding the present treatment we have only to discuss punctuation marks, the comparison of which is not infrequently neglected -- and quite unjustifiably -- since for the most part they are written quite "thoughtlessly," and the falsifier gives attention to them only in exceptional cases. For that matter, some of them have quite characteristic forms. Actually, they should have been treated simultaneously with the upper signs, since form-wise a number of them correspond to the latter. Thus, with respect to the formation of the punctuational period one can expect no peculiarities, in contrast to the i-dot, even though its placement is completely different. Neither does it make any difference whether double strokes are to be found above vowels or as quotation marks. Thus, that which has been stated above applies to all this. In addition, the following should be stated with respect to punctuation marks in general. Likewise in the case of these, of principal importance is their position, viz., in relation to the proceeding and following word. The one writer places his periods, commas, dashes, etc., directly by the last letters; the other leaves an interval; the third places them more closely to the following letter; still another leaves an equal interval between both letters and the sign. Under certain circumstances the mere use of certain punctuation marks -- above all, to an exaggerated extent -- such as exclamation points and dashes, can be of value for the comparison process. As far as the formation of punctuation marks is concerned, it is a question principally of dots and strokes or a combination of such. With respect to periods, all that is necessary has already been said. In the case of strokes, i. e., commas, semicolons, exclamation points, dashes, as well as in the case of accent marks which are not a part of punctuation, the principal distinction is

invariably whether they are formed curvedly or dashlike. Moreover, they differentiate themselves with respect to length, direction, pressure, hollowing of the curve, and tension analogously to the manner in which this occurs in the case of upper signs. Here also an arranging in order of the peculiarities found into the greater connection of the general writing tendencies and habits appears necessary. In the case of double signs, e. g., semicolons, exclamation points, similarly to the case of double strokes, exacting attention should be given the interconnection of both parts, i. e., their position in relation to each other, the emphasis of one or the other, etc. A matter of great importance is how they harmonize, e. g., whether the stroke of the exclamation point passes in direction the dot lying below, and whether this occurs to the right or left. Likewise, semicolons can be well or poorly coordinated. The formation of parentheses, which is scarcely ever given attention by either the falsifier or the expert, can be quite conclusive. In the factual script, almost invariably it can provide information with respect to the important question as to whether the natural hand of the falsifier tends toward angulation or roundness. Likewise in the case of the parentheses attention should be given their position in relation to the enclosed letters, the interrelating direction of position, distribution of pressure, tension of the curve, and so on. In various scripts the question mark can also be diversely formed in accordance with the manner of execution of the serpentine line, its relation to the dot, etc. Of course the question mark is such a conspicuous sign that with respect to the comparison process itself, a question mark might in turn be placed behind its utility.

The formation of strike-outs, dashes, and hyphens are

important even though they are not given due attention, and this even previously on the part of comparers themselves. Here also there are many possibilities of formation. They can be drawn straightly or curvedly, archedly, hollowed or serpentinely, long or short, thickly or thinly, tautly or limply, exactly or inexactly. That which has been stated in regard to the other double strokes also applies to the hyphen as a double stroke. The manner in which corrections by means of strike-throughs are executed can also be characteristic. Many people cancel by placing several strokes one below the other; others cancel by means of serpentine lines. Others prefer to x-out, while still others place a complete lattice work over the part of the script to be cancelled. It is such strokes as are not prescribed in the school copy, such as underlinings, and strike-outs, which can reveal much individuality, as much through their mere occurrence and frequency, as through their formation in toto and in particular, not only in the direct comparison process but also in the gradation into general writing tendencies of the writer producing them. Also applicable here is the old rule: The more insignificant-appearing and unnoticed a characteristic, the more indicative it can be for the comparison process.

III. Alternation of Characteristics, Letter Variations, and Combinations of Characteristics

In the progressive examination of stroke picture, movement picture, space picture, and form picture, we have intentionally left out of consideration a fact which is extremely important for the identification of handwriting -- a fact which in general has not previously been given consideration in the theory and practice of the forensic identification of handwriting. It is a question of

the following. Not only through the artificial production of script in falsification do individual characteristics invariably become altered in relation to the natural script, but an alternation of characteristics also occurs in every uninfluenced and genuine manuscript. Handwriting characteristics do not always occur in the same place and, in the presence of equal opportunity, in like manner. On the contrary, now these, now other, script characteristics come to the fore, while others retreat or disappear, perhaps by being displaced by others. A simple recollection of the science of expression shows that this must be so. Just as a person does not always make the same movements in expressing something, just as only a few persons are stereotyped in their gestures and their facial expressions, so is the script no rigid form, for indeed it also only represents a special manner in which the person expresses his personality. Thus, in the consideration of the script subject to identification we must resign ourselves to the fact that we shall not always find herein the same script characteristics, but rather quite diverse characteristics, often quite contradictory ones, just as in each character features are to be found which are in contradiction, even though they may be traced to a common basis. Arising from this is the important rule that contradictions in the characteristics of the script subject to identification and the factual script need not invariably and unconditionally signify something against the personal identity of their creators. (We ourselves, for example, have advanced examples above from one and the same manuscript for the quite diverse formation of the cross-stroke of the "t.") If there were only constant, i. e., fixed and repeatedly-occurring, characteristics, the comparison process would be child's play. But it is not such a simple matter, since we must comprehend the animate and

individual occurrence of expression in handwriting. This in itself explains the impossibility of being able to comprehend mechanically and purely statistically the occurrence of characteristics in a script.

Of course here also there are great differences. The more resolute and unequivocal a person is, the more he thusly expresses himself in his behavior and bearing, as well as in his handwriting, the more inconvertible he is in his handwriting characteristics, and the more certain and easier is the establishment or disqualification of his authorship of a script. The reason for this is that it will be very difficult for such a person to alter his own hand for the purpose of disguise or of copying a foreign script, and that his natural handwriting can unambiguously be comprehended. However, in the course of the development of culture man has unfortunately become ever more complicated on the one hand, and progressively less distinct and individualistic on the other. For this reason we encounter less fully constant and fixed scripts, as far as their characteristics are concerned. Characteristics easily overlap, as we have seen, for example, in the case of the form of connection. Position, breadth, and size fluctuate; forms become indefinite and deformed; contradictory characteristics occur in abrupt alternation, as we have seen above in the discussion of the alternation of strong and weak pressure.

It is obvious that all this -- which is of course known to graphology, but nevertheless never fully treated as to its significance with respect to this proven fact in the literature on the comparison of handwriting -- should be brought home to the comparing expert, in order that he may guard against serious erroneous conclusions. Otherwise, for example, he will find in the script subject

to identification essential characteristics which concur with those in the factual script, but will make a hasty observation so that if these contradictory characteristics also again occur in the suspected script he will as a result overestimate the former. Inversely, it is exactly the same matter with the establishment of discrepancies in both scripts, in the case of which concordances can just as well be found. Thus, also in the examination of the rightness of an expert opinion with respect to a complicated script it appears still somewhat questionable to us if it is established that a characteristic, e. g., a form of connection, is found "invariably and exactly this way" in concordance in the factual script and the script subject to identification. As was mentioned in the discussion of the psychology of the handwriting falsifier, it is usually not the obstinate and steadfast, unequivocal and "one-track" persons who are successful in falsifications, but the very adroit, people of many talents and capable of variation. However, in their natural script such an alternation of characteristic will occur more frequently, and this will usually be expressed in an abundance of variation in the factual script, since these fluctuations and sudden transitions come from inherited tendencies and primordial impulses. (Example of a script with many alternating characteristics (in position, breadth, connectedness, pressure, forms): Figure I, below.) This possibility of variation in an individual manuscript and the alternation of characteristics therein usually renders difficult an identification in the case of disguised handwritings. On the other hand, in the case of falsifications executed by copying, they can facilitate the unmasking of the perpetrator. For the diverse fluctuations escape extremely easily the attention of the copier, so that the constancy of characteristics itself in the copy can reveal

the falsification. Moreover, if, instead, the handwriting peculiarities of the forger himself have crept into the falsification, the failure of the falsification in this respect can also easily lead one to the trail of the falsifier. The recognition and utilization of these fluctuations in the script subject to identification, as well as in the factual script, of course requires a practiced glance and extensive experience. Hereby, it should be pointed out that in the case of individual characteristics very great differences exist therein, as to the extent they are subject to alternation. For the most part these are size, position, breadth, connection form, and letter form; for the least part these are rhythm, disturbance of stroke, and disturbance of movement, commencement traces which occur before the actual act of writing, and, in general, all characteristics which are less indicative of character than physically-conditioned characteristics, whence comes in turn their importance for the comparison of handwriting.

The principal difficulty is course entailed in distinguishing the genuine, so to speak, above all characterologically-conditioned, alternation of characteristics from handwriting alterations caused by falsification. Here it is a question of recognizing the rocky cliff in order to be able to get around it. Further, one should have a clear perception as to the manner in which the falsification influences the alternation of characteristics. Doubtless in many cases the falsification suppresses this alternation, and this because of the exaggerated regularity which of course occurs in every falsification, be it through the conscious formative will, be it through the reduction to the school copy, be it through the influence of increased stiffening. Resulting of course will be the

usual alternation of characteristics in the form of faux pas which it is then a matter of detecting. On the other hand, falsification of course increases the number of characteristics, as well as of alternating characteristics. Thus, another stratum of alternation of characteristics is placed over the factual script, as it were. In disguising it will only rarely be possible for the falsifier to invariably disguise in the same manner, i. e., to invariably produce the same characteristics, if he has not perfected an extraordinarily compact style of disguising or has not kept exactly to a model. An imaginative disguiser will intentionally strive for a certain abundance, above all in forms, as far as his disguised handwriting is concerned. Intentionally produced, such can then not be directly compared, but they can nevertheless make possible valuable conclusions on the natural hand of the falsifier, above all in regard to general execution of movement, distribution of space, and perhaps the manner of formation. In copies, as well, further alternation of characteristics can occur, in this case of course in opposition to the will of the falsifier, since he will not be successful, now unsuccessful, in matching exactly the characteristics of the script copied.

Thus, if it is indisputable that a strong alternation of characteristics in an individual script can represent a certain amount of difficulty for the forensic identification of handwriting, on the other hand such signifies a facilitation of the identification and under certain circumstances makes possible greater certainty with respect to result, if this alternation keeps within quite definite limits and it is possible to fix exactly its extent. This is above all then possible when this alternation is found to be a rhythmical one. To be sure, rhythm is but a certain type of

alternation, such as is subject to a vital law by which it is conditioned as far as its essence is concerned. Thereby, however, occurring in every animate rhythm is a certain constancy in alternation. One might take respiration as an example. In place of rhythm, another conformity -- even though unrhythmical -- can occur, if it is pervading and establishable, e. g., the appearance of certain proportions. Thus, if we can establish the rhythm, i. e., a certain alternation invariably occurring after a certain time interval, or another unrhythmical but regular alteration which is bound, for example, to certain words or letters, then the constant recurrence of such phenomena in the factual script and the script subject to identification will lead us more certainly to the establishment of the identity of persons than will similarities of form, for example. We have already seen several examples, and one might refer to our statements in regard to the pressure, size or breadth of handwriting. Or one might consider the frequent cases in which, in angular or arcade-manifesting scripts, a festoon, or in angular- or festoon-manifesting scripts, an arched curve, is regularly written as a commencing swing, as it were, at the beginning of a word. Or one might consider the case in which the final downstroke of a word represents an extensive stroke, or the case in which a letter, e. g., the "a," consistently projects outwardly in relation to others, and so on. All such phenomena, as we have constantly emphasized, are of the greatest importance for identification, since such can be traced to the unconscious depths of the writer. (Cf. Figure II and the discussion thereof.) But of course such rhythms or regular alternation must unambiguously and certainly be comprehended, which is not always a simple matter. Otherwise, one is easily led to faulty conclusions.

The establishment of such a limited alternation in characteristics is easier if it extends and is limited to letter variations which are limited in quantity. It is thus a question of the phenomenon that the writer uses several diverse forms, and these only, for one or several specific letters occurring together. It is here irrelevant whether they are taken from one and the same handwriting system or from several. (Cf. also Wittlich, loc. cit., page 213.) The Latin-style "r" serves as an example of a multi-form-manifesting letter of one and the same handwriting system. As we have seen above, this letter can be diversely formed. For example, it can be written in the form of an upstroke and a head thereabove, or in the form of a bridging stroke toward the right and a downstroke. The head can also be omitted. Or it can be formed with an arcade, i. e., a curved arch with a downstroke, an upstroke being attached hereto above, along with a pennon extending outwardly to the right. In the place of the pennon, a point can also be placed on the final upstroke. Thus, we have above four variations of this letter. If to be found in the script subject to identification, as well as in the factual script, are all these forms or several of them, distributed wherever possible in accordance with specific places, and if, for example, the last-mentioned form is found only at the end of words, no forms of this letter otherwise being in evidence, then this is of course much more indicative for the assumption of the identity of persons than it would be if in both scripts only one of the afore-mentioned forms were invariably to occur. It is a like matter in the case of the simultaneous employment of letters of different handwriting systems. If consistently to be found, for example, is the simultaneous employment of a Latin- and a German-style form of a specific letter, the one perhaps being used only as a final letter, or several forms of the

German or Latin system in addition to a form of the other system for one and the same letter, then we are here confronted with a limited plurality of forms, which in turn is of greater indicative value than is the constant writing of one and the same letter form.

We have seen that the various forces of movement, formation of space, and formation in general can and do take an active part in the most diverse letters of an individual script. One need only recollect the forms of connection or the angulation or roundness of letters. However, not infrequently there are cases in which the afore-mentioned forces concentrate on a certain letter or manifest themselves in a certain letter group, so that characteristics of diverse type and origin appear in this individual form. We call this phenomenon combinations of characteristics, and here also it is to the credit of Klages that attention has been called to their importance for the comparison of handwriting. (In Probleme der Graphologie, page 25 f., Klages refers to them as "similarities of complexion.") They appear particularly valuable, inasmuch as they particularly clarify and make impressive the combined effects of certain such forces in an individual script. The combinations represent a concentration of characteristics in such a script form. These characteristics are particularly indicative when they occur only in a specific letter or specific letter group, and especially when other writing tendencies come to the foreground in the remaining script. It is of course quite impossible to enumerate here all conceivable combinations; we shall here advance only a few examples from the practice. (Example in the Figures: In the case of the "a" in "Eingegangen" in Figure IV, in both specimens the loops are open at the top and are larger

and more vertical than the following letter. Moreover, in each case the first upstroke is drawn somewhat higher than the second.)

Next, a very simple example. A "b" which is formed angularly below at the base and has at the end a curve which courses leftward instead of a point with a cross-stroke manifesting a tendency of the script as much toward the formation of angles as toward rearward trend. The same is manifest in the case of a German-style "d" which is angular below and has a rearward-trending loop. Or a German-style "h" with a bulging loop and serpentine downstroke reveals a tendency toward fullness and toward modulation in downward movement. If, for example, in the case of the "m," the final arch rises higher than the first two arches and at the same time remains suspended, the downstroke not being drawn down to the line, one is confronted with a tendency toward enlargement with lacking constancy. The frequent appearance of a commencing stroke upward from far below with small commencing hooks signifies the combination of a physiologically-based phenomenon and a special peculiarity of movement. Or, if the second downstroke of the "g" trends rightward and the loop is suppressed, then here we have a combination of a tendency toward rightward trend and leanness. If, in the case of the Latin-style "a," the commencing stroke is drawn into the loop and through it, and the subsequent upstroke and downstroke is higher than the other small letters, then we have here a combination of a tendency toward an inward-rolling movement and a peculiarity of the distribution of size.

Such combinations are also quite often found in the case of upper signs. Let us take as examples the double strokes of the ä, ö, or ü. If these hasten beyond the letter, so to speak, i. e.,

if they are placed high and to the right, and if, in addition, the second stroke is situated lower and is more impressed than the first, both strokes being separated below, then we have in this one upper sign a combination of four characteristics, all of which express quite diverse writing tendencies in accordance with direction and intensity of movement. The so frequently-appearing rearward trending u-curve, finely drawn and having a small commencing hook, if it is placed low in relation to the letter, will manifest rearward trend, sharpness, inclination toward the lower zone, and a special writing tendency. Klages justifiably stresses that "such complex complexions, as such, may appear only in few scripts"; that "a sole similarity of such degree can cause the wavering of numerous groups of general differences, just as, inversely, great general similarities can run aground in the face of a sole complex diversity." Especially conclusive are such combinations if their concordance permits concluding a correspondence in rhythm or some other uniform distribution of characteristics in the script. Such will of course be found principally in entire groups of letters. A combination of a special rhythm of breadth, size, and position, or such uniform distribution, is in evidence, for example, if in, let us say, a syllable or the name in a signature, the middle letters are written more narrowly than the others, being at the same time larger and more vertical. It is a like matter in the case of the German-style "sch" when the three letters stand closer together than the other letters of a word, the downstroke of the long "s" is drawn further below than that of the "h," and all three letters trend toward each other above. Final syllables are likewise often written smaller and drawn upward at the same time; they are also often written in a thread-like connection. Here we

find a combination of certain peculiarities with respect to distribution of size, execution of line, and type of connection. Usually to be found in the case of the above-mentioned ligatures is a combination of abbreviated strokes, rapidity, and the overlapping of form.

IV. Special Types of Falsifications and Comparisons

That which has previously been said, particularly with respect to characteristics and their valuation, as well as the method and its execution, applies to all types of falsifications and comparisons, as well as to that which is discussed in the following. In the case of the latter, it is exclusively a question of such as, due to their peculiarity, require a special summational treatment. Such a treatment is here necessary partially because in this case the script affords graphological particulars, e. g., signatures; partially because the documents in question undergo special forensic treatment and thus provide special tasks for the comparison process, e. g., wills; partially due to the special technique of the falsifications, e. g., tracing and writing with the left hand.

1. Falsifications of Signature

The special treatment of this type of falsification of documents is justified, as has been said, in that the signature in the main assumes a special position in the script, and in that the prosecution and judgment of falsifications of signatures plays a great role in the forensic practice. From a graphological standpoint, a clarification of the therewith-connected question as to whether the unmasking of a signature-forgery is more difficult or easier than that of another handwriting forger appears suitable, because there has been much disputation in regard to it.

The importance of the signature in legal questions can be explained by the fact that such is to a great extent regarded as representative of the person himself in juristic matters. From a legal standpoint, the signature is that form by means of which one attests his approval of a documentary declaration. It thus signifies the perfection of a documentary declaration. By means of the signature it is expressed that one wishes the above-lying text of the document to be considered as ones own declaration. (Cf. Weismann, Der Tatbestand der Urkundenfaelschung [The Facts of the Case with Respect to the Falsification of Documents], *Zeitschr. fuer d. gesamte Rechtswissenschaft* [Journal of General Jurisprudence], Vol 11, page 1 f.) However, more important than the legal significance of the signature for our special theme is the fact that graphologically and in the graphological judgment it assumes a special place. Of course, in this respect, it has lost much of its previous significance, now that -- at least in Germany -- there is more and more evidence of digression with respect to stressing of the signature in relation to the text, i. e., digression with respect to rendering the signature a special appearance and impression by means of embellishments, elaboration of majuscules, or emphasis of size and pressure. This is even more the case, since nowadays one no longer tends to apply the decorative flourish which has previously been so popular and, among other reasons, was executed for the purpose of rendering difficult the forging of this signature. These desistances are of course connected with the general practicality, as well as the inner impoverishment, of modern man and, therewith, with his handwriting. But it is also connected with the great inclination of the general development of handwritings, which progress ever more from the descriptive to the abstract. In spite of this there can be no doubt but that even

in its simplified form the signature plays a special role in the comprehension of the personality of the writer, and this not only in analytical, but also in comparative, graphology. Be it ever so temperate, a signature encompasses something individual to a much higher degree than does the remaining script. Indeed, even the especially simplified signatures, which today are not uncommon and which scarcely permit recognition of the letters, but on the contrary represent much more logograms or monograms, as we have previously pointed out, have something quite unmistakable and peculiar to the highest degree. That here the mere comparison of letters promises nothing should at this point be pronouncedly repeated. Of course, neither should the characterological significance of the signature be overestimated. Above all in the older graphology the interpretation was advanced that it is a synthesis of the character of the writer, that the latter here "reveals naive features of his character, which he otherwise conceals," etc (Crepieux-Jamin, "les elements de l'écriture des canailles," page 6). The newer supporters of this interpretation (e. g., Wittlich, loc. cit., page 218) stress that in the case of signatures the rhythmical peculiarities come especially strongly into prominence, and that more peculiar formation is applied in them than in the remaining script. This may sometimes be conclusive, but as far as this generalization is concerned we consider these assertions exaggerated. Thus, it might be pointed out the signature, especially the difficultly readable signature, not infrequently determines more a veiling, than an unveiling, of the character. It might further be pointed out that one is often called upon to examine remarkably unindividual signatures. We are more disposed to assume, along with Pulver, who has likewise dedicated an entire chapter to the signature in his above-cited book, that it is possible to observe in the signature a "biography in nuance," so to speak, i. e., an abbreviated life history. Moreover, he is in agreement with most graphologists who maintain that the self-reliance of

the writer is in some manner expressed therein, and that often there- with a certain advertisement effect, so to speak, is aimed at. What does all this now signify for the comparison of handwriting?

With respect to the ease or difficulty of convicting a signature forger it can be said that this depends above all on the emphasis of expression of the strokes of the signature in the individual case. In many signatures the individual person is actually very strongly stamped; in other cases the signature represents a "persona" more in the sense of a disguise. The one practical difficulty for the comparison of handwriting exists in the case of all falsifications of signatures, viz., that the compass of the factual script is quite slight if it depends solely on the signature. However, on the other hand it should be emphasized that characteristics which are found in a signature have an especially great indicative value, as has been taken into consideration in our fifth basic principle, inasmuch as the signature is formed of writing strokes, the development of which, with respect to type and form, can be traced to deeply-ingrained writing habits. For every person who is accustomed to writing is most familiar with ones signature, and it is the least likely to become altered in the course of life. Rather, it becomes fixed earliest of all, earlier than the remaining script. There are two reasons for this: (1) it expresses that which is bound with tradition, so to speak; (2) the person active in public or professional life must account for the validity of his signature. If such were to be constantly altered it would lose its validity. In addition, the signature expresses something of self-assertion and even though subject to modification by destiny, this can be basically traced to quite deep strata of the personality. That which later in life has been acquired from foreign handscripts or has influenced the signature is for the most part automatized at an early stage, thereafter becoming a fixed part of the signature.

Thus, it is with justification that Wittlich asserts that forgeries of signatures are often easier and more certainly explicable than are other forgeries. Now, indeed, the especially great indicative value of signature characteristics is principally manifest in a negative sense, i. e., if a signature, as factual script, and such in scripts subject to identification are not in concordance in essential characteristics, or if they are strongly in contradiction. (Cf. Figure V and discussion thereof.) For the writer, in the case of whom the signature has become second nature, will scarcely ever alter to any great extent its strokes which he is accustomed to writing in exactly the same manner. Therefore, a deviation from habit will appear from the start as questionable. If now the signature has departed from the script, which is usually formed in orderly-arranged letters, to such an extent that it has more or less become an abbreviation, due to strong contractions or running-together of letters, then this abbreviation tends to be so firmly fixed and inflexible that here essential deviations in characteristics scarcely ever occur in the natural manner but solely through intentional alteration, i. e., through falsification, of course presupposed, so that they are considerable and no longer lie within the natural breadth of variation which in the case of just such signatures and signatures in general can be quite limited. If such deviations concur with the script of a suspect, they will lay serious charges on the latter. On the other hand, a concordance of the essential characteristics in signatures will be strongly indicative of their genuineness, if these are to some extent expressive. If this is the case, the signature can easily be established as doubtless genuine. Here it often also depends on such small matters as whether the writer places a period after his signature.

The above-emphasized importance of the signature as an "abbreviated life history which has not continued up to the present, " i. e.,

the circumstance that as a rule the development of the individual script has lagged behind that of the remaining script of the same writer, can further be of significance for the comparison of handwriting from a twofold point of view. (1) Older signatures can still be employed as comparison material, if no other contemporary writing can be procured whereas the possibilities for comparison with other scripts are lessened due to their different age in relation to the factual script, since in the meantime the script of the suspect could have further developed in another direction, thereby perhaps now manifesting other characteristics. (2) Indicative from the graphical peculiarity of the signature in general is the fact that the determination of a forgery of a signature and the exposure of the perpetrator, under certain circumstances, then becomes difficult, if only texts without complete signatures, e. g., letters signed only with the Christian name, are available, perhaps because the suspect has died in the meanwhile, which in the civil process does not prejudice the requirement of the determination of the forgery and the personality of the forger.

In summary, it can thus be said that comparative characteristics in signatures have a certain position of value, so to speak, since here they are particularly indicative.

Of course all this applies only to copying of signatures for purposes of falsification; no particulars are applicable in the case of the disguising of signatures. At times it is of some importance whether the text and the signature have been written with the same ink. Then the processes with respect to the establishment of the identification of inks, enumerated in the following section, come into question.

2. Falsifications of Wills

In addition to being drawn up before a court or notary, a will can also be drawn up as a so-called autographic will, i. e., by means of a declaration written and signed in ones own hand (Article 21 of the law dealing with wills). Formerly, very strict regulations in regard to format were in effect, e. g., it was required that date and location be properly entered and that the signature contain both Christian name and surname. Recently, violations in this respect no longer render at once invalid the will. It is still important for the expert to know that a later will renders invalid an earlier will, to the extent that the later will contradicts the earlier in content (Article 36 of the law dealing with wills).

These autographic wills are now not infrequently the object of falsifications or adulterations and, next to copied signatures and anonymous disguised scripts, represent the principal contingent with respect to cases of comparisons of handwriting in the forensic practice. In those cases in which the genuineness, i. e., the autography, of the will is contested, a decision must be made by means of the comparison of script. If it has not been written by the testator, even though with the permission of the latter, then it is invalid as not being autographic. Likewise, additions or interpolations by a foreign hand in an autographic will are invalid, even though they have been executed with the permission of the testator. But on the other hand as a rule they do not render invalid the entire will (Article 2085 of the civil code).

As a rule the case will be such that, without the knowledge of the testator or after the death of the latter, another person

supplements or alters with an addition the genuine will of the testator to the person's own advantage, or, which is still more frequent, even completes by means of copying the testator's handwriting a will presumably written by that testator. The contents of such a will favor the copier who will then make demands on the basis of this forged will.

In all these cases no particulars apply to the comparison itself; the comparison is carried out in accordance with the general rules established by us. An exception here is that often other tasks fall to the share of the expert -- tasks which are different from those accruing in the case of other document forgeries. In the case of wills which are entirely copied the comparer can usually be comforted by the fact that a factual script of a certain encompassment is available, in the case of which faux pas will be more in evidence. In the comparison process it is recommendable that one proceed in such manner that the factual script is first compared with the true hand of the testator. If then the genuineness of the former is established, further comparison can be dispensed with or will come into question only as a test.

In the case of wills there is usually cause for the very pre cautious examination as to whether deviations in the script in question from the doubtless genuine script of the testator might have been caused by something other than the falsification. Indeed, wills are very often written by old, sickly, or frail persons, sometimes on their death bed. However, in the case of such, writing disturbances can appear, which must be accurately differentiated from falsification characteristics. An examination in this direction is then particularly necessary in those cases in which between the time of the writing of the script subject to identification by the

testator and the ostensible production of the will a corporeal or mental deterioration or a serious illness of the testator has occurred. However, such writing disturbances can usually be distinguished from falsification characteristics, since they express themselves in a different manner. Such hygienically-conditioned writing disturbances are usually expressed in wavering strokes, disruptions or interruptions of stroke, uncertainty in direction, or heavy disturbances of pressure. Or exhaustion may be manifest in descending lines, or the writer may no longer be capable of joining together letters into a unified form. The extent to which still other writing disturbances could occur due to certain diseases has not yet been subjected to sufficient research and would require a further investigation.

If such characteristics are found in exactly the same manner in the factual script and the script subject to identification, then one can usually unhesitatingly consider the will as genuine, since it is here a question of the most deeply-based script disturbances of a physiological type, the exact copying of which can be accomplished by the forger only in rare cases. If such disturbances are lacking in the genuine scripts of the testator, they still could have crept into the will in question due to excitement or mental depression in the writing of the will. But this would be possible only if it were a question of disturbances of lesser type. Or, which occurs oftenest, they could have occurred due to a subsequently-appearing hygienic disturbance.

Even though such script disturbances are of the greatest indicative value for the question of the genuineness of a will and the personal identity of the testator and the writer of the will,

their significance should nevertheless not be overestimated. For it must always be borne in mind that the occurrence of such graphical disturbance phenomena in a will -- phenomena which can be traced to physiological, i. e., here, principally hygienic, causes -- still does not indicate directly the genuineness of the will. For it should not be overlooked that in many cases the forger of such, when such characteristics in the script of the testator appear conspicuous to him, will attempt to copy these also. Thereby, similar phenomena will occur in the falsification, even in those cases in which the forger does not entirely match the characteristics in accordance with the model, as will usually be the case. Thus, first of all an examination should be made to ascertain whether these script phenomena concur in the type of characteristic and in form, or whether they could have been produced artificially. Second, even though the ataxia or wavering characteristic appears genuine, one must still reckon with the possibility that similar graphical symptoms of hygienic disturbances might also be found in the natural handwriting of the forger. Thus, as a rule in such cases one cannot avoid an exacting graphological analysis of all the script characteristics. (Cf. Figure VI and discussion thereof.) All this applies to those cases in which it is a question solely of the genuineness of the will and a specimen of the handwriting of the suspect is not available. If such latter is available, then one will be able to see more clearly. If such characteristics are to be found in the will but not in the script of the suspect, then this lack will exonerate the latter if it must be assumed that the disturbance characteristics are such as cannot be forged. In other cases the ability of this forger with respect to the artificial production of such characteristics would first be examined, and upon

the confirmation of this question the usual analysis would then be carried out. If such disturbances of stroke are found in the script of the suspect but not in the will, then as a rule the suspect is exonerated, for such disturbances can virtually never be suppressed for long duration.

Therefore, in general, in addition to such disturbances, all other concordances and contradictions in the characteristics, and above all in the signatures as well, should be fully used as in every other comparison for or against the genuineness and in the comparison with the handwriting of the suspect for or against the latter. In the case of wills one may even go somewhat further, since here otherwise perhaps not as important characteristics can indicate falsification. For example, if in the will in question orthographical errors occur in the testator's own name, or if there are other deviations from the usual manner of writing, or if this occurs in the case of the names of close relatives or friends of the testator, then this is here extremely suspicious even though it cannot infallibly be explained by an abatement of intellectual power, for such errors can easily occur in the case of the forger but not in the case of the testator. It is somewhat a different matter, of course, when the names of persons or places occur in the will through a special manner of writing, e. g., Latin-style script. This is quite customary, above all in the case of ceremonious declarations such as ones last will. If corresponding phenomena are found in the genuine script or in that of the suspect, then they can of course be appraised as comparative characteristics.

In the case of wills the determination of age can be very important -- determination of both the age of the testator and the

age of the will. Thereby, one is often able to at once decide the genuineness or nongenuineness of a will. Now of course we cannot exactly and certainly diagnose the biological age of a person from handwriting. At times we can draw indirect conclusions on age from the school copy used, as we have seen in the discussion of the school copy, for an old man does not write Suetterlin script, while a young man does. Sometimes we can obtain such clues from handwriting, at least with respect to the likelihood as to whether a script has been written by a young or old person. There are in actuality some persons who were never young, so to speak, and this will be stamped in their handwriting. On the other hand, many persons maintain until an advanced age a certain youthfulness and will still have even then a vital and fixed script. As a rule, however, it will be so that an entirely unconsumed vitality, establishable in the script, for example, by a tense, dynamic execution of stroke, will permit concluding with great likelihood a younger writer. Hereby, we are leaving entirely out of consideration the infallibly establishable, so-called handwriting of puberty, since persons in this age make wills only rarely and forge wills just as rarely. A pronouncedly senile script is establishable through certain characteristics. Indicative hereof are ataxia, unsteadiness, stiffness, contact difficulties, marginal disruptions of strokes. (Cf. Pophal, Strichbild [The Stroke Picture], page 32.) Of course these characteristics can be partially grouped with those which can occur in the presence of physical or psychical disturbances, but only partially, and such disturbances in general will not come into question in the case of the scripts of younger persons. We can nevertheless determine with some probability whether the will was made by an old or young person, and such an establishment, in accordance with the circumstances of the case, can be decisive.

In other cases the answering of the question as to the age of the will can be important or decisive. This circumstance finds its significance above all in the previously-mentioned legal stipulation, in accordance with which a later will with a different content renders invalid an earlier will. In the determination of the age of wills one can proceed by technical means, and in many cases such is advisable. Thus, there can be a determination of the age of the ink used, as well as of the paper. For the determination of the age of ink chemical processes also come into question, but the results of such are usually not too certain. It is above all difficult to thereby properly estimate the effects of climate on the script. (Cf. Arch. f. Krim., Vol 92, 107; 96, 13; and especially 107, 7 f.; also R. M. Mayer, loc. cit., page 36 f. At the present time very interesting investigations are being conducted on the effects of climate by the Federal criminal court and the cantonal police administration of Zurich.)

The graphological establishment of the age of a script or even the succession in which several were written is of course possible in only certain cases, and even then scarcely ever with any degree of certainty. The prerequisite therefor is the procurement of a great amount of script material of the writer which extends over the longest possible period of time and which contains specimens from various epochs of his life which were important in his development. Under certain circumstances, the entire development of the script of the writer of the will can then be unrolled, as it were, i. e., how this development has proceeded in the course of his life. If one is successful in establishing and producing a unified developmental line, then one will also be successful in bringing into connection with the latter the will (the age of which

is to be determined), thus determining its relative age. If the temporal intervals in the drawing up of the wills whose succession is to be determined are great enough, under certain circumstances it will also be possible to arrange them more or less chronologically. Of course this is an undertaking which should be braved only by experts who are experienced and well-schooled in a graphological sense. With respect to the age of wills, it might supplementarily be mentioned that one should very precautiously conduct an examination to ascertain whether the date has been falsified or is genuine, and that this should be carried out in all cases in which the date plays a role. In regard to the practical execution of this examination, reference is made to that which was stated with respect to ciphers or numerals.

The question of the identification of ink in cases of additions made in wills can likewise be important. There are also chemical processes for the establishment of such identification. (For example, in Zurich a so-called paper chromatography is employed. Here, we cannot go into further detail thereon.)

It might be mentioned here in passing that the sex of the writer -- unfortunately -- cannot be determined from handwriting alone. However, we shall come back to this theme later.

In legal processes dealing with wills it is often a matter of dispute as to whether the testator was capable of drawing up a will at the time such was actually completed. Reasons which, in addition to interdiction, exclude such capability are the following: diseased disturbance of mental activity, imbecility, disturbance of consciousness (e. g., as a result of drunkenness) (Article 2, Paragraph 2 of the law dealing with wills). We cannot diagnose with

certainly mental diseases from handwriting. This we shall discuss below. Nevertheless, there are handwriting peculiarities which afford quite good clues with respect to imbecility. Among these are encumbrance with respect to proper formation, possible incoherence in the script, complete lack of every peculiarity, disturbances in the rhythm of distribution of a severe type, breaks in formations, infantile forms and strokes, an anxious keeping to the school copy, and the like. Manifest in the case of the stroke will principally be granulated and amorphous conditions, restlessly wavering and very dark "doughiness," and marginal disruptions. (Pulver, Intelligenz [Intelligence], page 97 f.; Pophal, Strichbild.) The effects of alcohol can at least be surmised -- above all when it is a question of chronic alcoholism -- from smeary, dull handwriting with fused loops, blottiness, and general insecurities of movement and disruptions of form.

A special case for the comparison of handwriting in the case of wills, which incidentally is becoming a practical one, is represented by examination of the question as to whether, in the drawing up of a will, another person directed the hand of the testator or supported him in writing, because the testator, usually because of frailty, no longer was capable of this act without aid. (Here we have an extreme case of the so-called special writing circumstance, e. g., unaccustomed position of pen, great excitement, and the like.) In the case of the so-called guiding of the hand, the will becomes invalid, because it is no longer regarded as autographic in the eyes of the law. Merely supporting another's hand in writing does not prejudice its validity.

The Imperial High Court of Justice was often concerned with this question. Most briefly and pregnantly, it once formulated the

distinction in the following manner. "An autographic will would not be considered as such if, in the drawing up of the will, the hand of the testator were fully subjected to the control and guidance of another person. In actuality, the text can then be said to have been executed by the hand of the other person, instead of the hand of the testator. However, if, in the execution of the writing, the hand of the testator has remained free in the movement intended by the testator, and if the support of another was lent merely to make possible the writing, then an autographic will is said to exist." (Warneyers Jahrbuch d. Entscheidungen (Zivilsachen) [Warneyer's Yearbook of Decisions (Civil Cases)], No 31, 1909.) The establishment as to whether one or the other is in evidence in the concrete case is an interesting, if not always an exactly easy, task of the handwriting comparer.

An investigation conducted by Buhtz (Deutsche Zeitschrift f. gerichtliche Medizin [German Journal of Forensic Medicine], Vol XVII, 1931) on this question, carried out with experimental persons who suffered psychotic handwriting disturbances, yielded the result that, in contrast to the natural handwriting of these patients in the presence of a similar participation by another, the following variations occurred. Neither the natural characteristics of handwriting nor its tremor, i. e., its wavering strokes, was essentially affected by support of the hand. On the other hand, the atactic disturbances which were habitual here decreased; the finishing movement was curtailed; the natural characteristics of the patients became more conspicuous, because their handwriting became more proportional due to the support. On the other hand, when the hand was guided the natural tremor was lacking; nevertheless, alterations of position and pressure occurred with large angular formations, as

in the case of a strongly disguised script, and alterations likewise occurred in the individual script characteristics. The handwriting picture of the person guiding the writer and, above all, his handwriting system, were made manifest.

Even though, in the case of writing testators, it is usually not a question of persons with psychotically-conditioned writing disturbances, but usually of persons whose writing disturbances are due to frailty, nevertheless it seems to us that we can unhesitatingly use these establishments in the forensic practice. That which is decisive thereby may perhaps lie in the finding that the handwriting picture of the person guiding the hand of another appears in the handwriting picture resulting from guided handwriting, whereas, as we can gather supplementarily from the establishments, the handwriting picture of the writer who is being supported appears in the case of supported handwriting. Thereupon, it will depend on whether the one or the other is the case. hereby, principal value will be placed on the evaluation of the execution of movement, since this must of course have been free, if the will is to be regarded as autographic, i. e., as valid. Also interesting for the comparison of handwriting is the establishment that guided handwriting gives the impression of being strongly disguised. Here, we shall proceed entirely in correspondence with the manner of proceeding in the case of disguised handwritings, and in such manner that the guided or supported script is treated as factual script, while the natural script of the testator who is hindered in writing and the natural script of the guiding or supporting person is treated as the comparison script.

It is perhaps in the main to be recommended that the question

of the guiding or supporting of the writer's hand be investigated in those cases of comparisons of wills in which considerable contradictions between the script used in the will and the usual script of the testator have come to light with no evidence of falsification, since then the possibility must be reckoned that it was a helping or guiding hand, rather than a falsifying hand, which was called into play.

Wills drawn up before judges or notaries are seldom the object of falsification, since they are declared before, or surrendered to and protocolled before, these officers, the protocol then being signed by the latter, after which everything is then given over to the safekeeping of the officials. There is nothing in particular to be said in regard to such wills.

3. Tracing and Writing with the Left Hand

Not every falsifier is capable of accomplishing in free hand the copying of a foreign script in so credible a manner that he finds success in his intentional deceit in legal circles. Therefore, many make use of the popular forger's trick of tracing, especially when it is a question of the copying of scripts of lesser compass, and above all when it is a question of the forged copying of foreign signatures. By tracing one understands the imitative drawing of the strokes of a genuine script, directly or by means of tracing paper, with direct or indirect transfer to normal paper. This can occur in three different ways (cf. Schneeberger, loc. cit.).

1. Direct tracing is carried out in such manner that the genuine script is held against a window pane or placed upon a glass plate which is illuminated from below. Then the outlines of the genuine script which are visible are traced on paper. This is

usually first carried out by means of a pencil, after which these pencil strokes are traced over with ink. If this is carried out at once by means of ink on a vertical base, then under certain circumstances the falsification can be recognized in that the ink has collected more strongly below than above. (Arch. f. Kriminologie, Vol 10⁷, page 98 f.) By means of strong magnification this establishment is possible particularly in the case of long letters. The conclusion of a tracing is of course only justifiable if pressure is in evidence at the end of the downstroke not only in the script copied, but in both cases.

2. Indirect tracing is carried out in the ordinary process of duplication by means of carbon paper. One places the carbon paper between the genuine script above and a sheet of paper below with the blackened side of the carbon paper downward. Then the outlines of the genuine script are traced with a pencil or some similar object, e. g., a stylus or a blunt needle, so that these outlines are impressed on the paper below as carbon traces. Here danger is entailed for the falsifier in that it is often still possible to determine carbon traces on the falsified document, even though the attempt to efface them by tracing over them has been made. Moreover, the tracing over of the thusly-duplicated strokes reduces the exactness of the imitation.

3. Finally, the same type of duplication can be carried out directly without the use of carbon paper by subsequently filling out the furrows which are impressed on the paper below in the tracing of the genuine strokes with the stylus. In this process the falsifier has the advantage that no carbon traces are left behind. But there is also the disadvantage that this process invests the genuine script which is being used with recesses, i. e., damages it.

All three types render only an approximate copy, due to the necessity of filling out the strokes. These processes are especially difficult for the falsifier in those cases in which the genuine document must not be damaged. Tracing can usually also be established by technical means, due to the traces which are left behind. Such can often be established by means of observation with the magnifying glass alone.

From a graphical point of view, tracing is also not infrequently revealed through glassy, inanimate, languidly-drawn strokes, through mechanical similarity with the genuine script, and usually through frequent recommencements, since a fluent tracing is extremely difficult. Reverse movements easily become angular and awkward; distribution of pressure becomes unrhythmical and rigid. Really fine hair-line strokes in tracing are practically impossible to reproduce, if they are not first traced through with pencil and then filled out in ink, which in turn adversely affects the accuracy of the tracing. In general all animateness will be lacking in a script thusly produced. Upon closer observation the outward similarity will manifest itself as an illusion, since invariably inorganic deviations from the genuine script will be found in the details, principally in the direction of stroke and the distribution of pressure of the individual stroke constituents, because a precisely accurate tracing is virtually impossible and experience has shown that tracing invariably makes the stroke uncertain. For the attempt to follow exactly the handwriting stroke to be traced and the thereby exaggerated concentration on details usually causes a frequent removal of the pen from the paper during the drawing of strokes in the tracing, which, under certain circumstances, is bound with reparations, faulty shading, and unnatural pressure, as well

as almost invariably an uncertainty in the direction of stroke in the exaggerated attempt to follow exactly the direction of the stroke being traced. All this adversely affects the naturalness, relaxedness, and swing of the writing stroke to a conspicuous degree and justifies the suspicion of tracing.

In most cases it will also be possible to establish the existence of a tracing, as such, by means of an exacting graphological analysis.

Much more difficult is the question as to whether clues in regard to the perpetrator can also be found in a tracing. This will not be possible in all cases. In the case of tracings of greater compass, in particular when the perpetrator has had no opportunity for practice, occasionally characteristic peculiarities can nevertheless also be found in the tracing stroke -- peculiarities which contradict those of the script copied but which concur with those of the suspect. Or other reversions to the normal script may be found. However, it should not remain unmentioned that such cases in which a certain conviction is possible on the basis of a tracing alone will be exceptional ones. Of course this is of little use to the falsifier, inasmuch as, by means of this process, he will produce only quite imperfect fabrications which are easily recognizable as forgeries.

One could also group with tracings those falsifications which are committed in such manner that the perpetrator first draws the script strokes, e. g., those of the signature to be copied, in free hand with pencil and then fills them in with ink. This process affords him the advantage that he can repeatedly erase these strokes until they appear to him sufficiently similar to the genuine strokes.

This of course presupposes not only that he has available a genuine script by means of which he can practice, but also that he is in no way limited with respect to paper and space, e. g., bills of exchange or checks, in the case of which he has available an unlimited number of forms. From a graphological viewpoint, that which was stated above in regard to the danger of tracing and the leaving behind of traces applies here. (Such traces of previously-drawn strokes will usually still be clearly visible under the magnifying glass and, above all, by means of the epidiascope.) Here the prospects for an exposure of the perpetrator are much greater, since in the case of this process it is a question of a writing in free hand, with respect to which, in accordance with the same rules and the same prospects of success as is otherwise the case, a methodical analysis can be carried out.

A forgery in the legal sense -- but not in the graphological sense -- is represented by the previously-mentioned compilation of cut-out or photographed genuine letters of the script to be imitated and their deceitful assembly into an apparently genuine document, usually by means of a photographic process, since otherwise an artificial compilation would be too easily revealed. In this case the handwriting expert can at best establish by means of graphological processes the artificiality of the assembly of letters or words. Here, a comparison of handwriting is in actuality uncalled for, since the script, as such, is indeed genuine, and a falsification has occurred only through the compilation of its constituents.

According to our experience, a trick which is only rarely employed by the handwriting falsifier is the production of script by means of writing with the left hand. This is of little use to

him, since this process does not disguise the script to such extent that the natural script cannot be reconstructed therefrom without great difficulty. This is explicable upon recollection of the fact that manuscript is actually a cerebral script, i. e., in writing, the individual strokes must repeatedly issue forth, regardless of which hand is used, even though the indexterity of the left hand and the unfamiliarity with the different positions simultaneously results in certain alterations of handwriting, principally in its finer formation. Therefore, we need here go no further into detail. (Cf. Georg Meyer, Graph. Monatshefte, 1904. Here, Meyer has treated these questions in detail.)

4. Comparison of Orthography

Finally, a special type of comparison of scripts might be discussed briefly. This comparison is not of a graphological type, but in many cases it can be employed to advantage as an expedient. This is the comparison of the orthography used. Hereby, above all to be given attention is the fact that in the examination of orthography it is a question not only of errors therein, but of a comparison of all orthographical peculiarities, i. e., not only of errors, but, above all, such peculiarities for which no binding rules prevail. We have here in mind, for example, the writing of the month in German or Roman numerals or in letters; or the placing of a period after the date, signature, address, or sender's data; or the placing of a comma or exclamation point after the salutation; etc. Such small details can of course never be decisive but nevertheless important, principally when occurring in addition to other characteristics. It might also be pointed out that at times grammatical or syntactical peculiarities can be of importance, as can the use of certain turn of speech or phrases.

With respect to the judgment of the concordance of orthographical errors, it should be mentioned that in regard to their evaluation it depends entirely on where they are found and which type they represent. We have already seen that such in signatures and wills have particular indicative value, and we know the reason for this. But also in the case of proper names in general this can, under certain circumstances, be the case, as it can be in the case of ones own name in the main, or in the case of those of close friends and relatives, whose name has passed over to the writer in flesh and blood, as it were. Ordinary errors and those which tend to occur in the case of little-schooled and uneducated persons, e. g., the "i" instead of "ie" in compensatory lengthenings of vowels, or errors in foreign words, are usually of little consequence. Exceptionally, such can also be indicative when they occur consistently throughout the entire script, or above all when they contradict the level of education of the presumed writer. Greater attention is due more or less conspicuous errors which tend to be found only in the case of few persons, especially when they reveal a certain whimsicalness or caprice in the manner of writing.

Orthographical errors in disguised scripts usually bespeak nothing at all, since many handwriting disguisers likewise more or less disarrange their orthography.

C. THE LIMITATIONS OF THE FORENSIC IDENTIFICATION OF HANDWRITING AND THE CERTAINTY OF ITS RESULTS

Now that we have come through the entire field of the forensic identification of handwriting, we are now in a position to mark out the limitations of its possibilities.

Disregarding the bounds to which every human knowledge is subject, these limitations are of a threefold type. Exactly as in the case of any handicraft or art -- and in its practice the comparison of handwriting is somewhat similar -- likewise in the case of such comparison, failure can be traced above all to the insufficiency of the handicraftsman or artist, or to the imperfection of the tool employed, or finally, to the difficulties which lie in the material to be worked, as well as in particular to the fact that the material, as such, may not be suitable for the task at hand.

We can here eliminate the insufficiency of the tool, i. e., in this case, the previous method, in consideration of the fact that we have sufficiently enlarged upon this matter. And at this point we can make reference to our earlier statements on the method.

Among the deficiencies with which handwriting experts, as such, are confronted, and which even today are to be found often enough in their case, can be mentioned above all the lack of sufficient practical knowledge as a result of deficient preparatory education, training, and schooling for this profession.

Complaints with respect to the foregoing arose in a quite early epoch and have actually never abated for the entire period in which the science of the forensic identification of handwriting has existed. (From the critique of Hans H. Busse on the expertise of the Dreyfuss case of 1898 (Graphologie und ger. Handschriftenuntersuchung [Graphology and the Forensic Investigation of Handwriting]), and the sharp attack of Klages in 1926 ("Against Graphological Bungling," Ztschr. f. Menschenkunde, Vol 2, No 4),

to the decision of the OLG of Brunswick of 10 April 1953 (Jur. Ztg. [Journal of Jurisprudence], 1953, page 515) and the Cologne Conference of Graphologists of 1953 (cf. Ztschr. f. Menschenk., 1953, page 192), these complaints have repeatedly appeared. Moreover, throughout the period represented, finishing education and state examinations for handwriting experts have been demanded. The Federal criminal court has also recently taken it upon itself to make this demand.) I, myself, have already expressed my views in regard to this matter in the introduction to the present work and elsewhere (Juristenzeitung [Journal of Jurists], 1953, page 494 f., "The Forensic Handwriting Expert"). Therefore, I can here express myself somewhat more briefly.

It is quite incomprehensible why lesser demands should be made by authorities and courts on handwriting experts, with respect to knowledge and experience, than on other experts. The previous statements shall have given the reader a clear perception that a good and successful execution of a forensic identification of handwriting is by no means simple; that such perhaps requires a solid graphological basis, an especially schooled glance, and an exacting knowledge of the mentality and technique of the falsifier; and that, as well, here and there rocky cliffs rise up, as it were -- cliffs which can become fatal for even a good handwriting expert. In short, it is just as in any profession: it is easy to poorly equip the expert; it is quite difficult to equip him well. Indeed, one of the main concerns of this book is to eradicate this insufficiency in knowledge and schooling of many handwriting experts.

Unfortunately, in the case of not a few handwriting experts, there exists a quite considerable insufficiency with respect to self-criticism. It is repeatedly the experience of chief surveyors

that sometimes in the most serious cases handwriting experts announce the result of their comparison "with absolute certainty," occasionally on the basis of unsuitable methods or even on the basis of insufficient comparison material. Here, very often some self-moderation would be called for, as much in regard to personal capabilities as to the efficacy of the method. Even though it is least of all our intention to subscribe to the malignant observation of Saudek, i. e., that it is here a question of an "ostensible self-assertion as the reaction to a subconscious inferiority complex," an observation which would only apply to the minority of our experts, nevertheless a serious monition is entirely in place. In this connection, however, the handwriting expert should not expect too much of himself in undertaking tasks which would be better left to a specializing expert or which would at least require the assistance of such, e. g., in particular with respect to chemical or purely technical investigations, as well as to the comparisons of mechanical scripts, to the extent that the handwriting expert is not especially trained herein or has no special experience.

If, in the further discussion of the deficiencies of many experts, we mention insufficient objectivity, we of course do not refer to conscious partiality or even corruptibility. In spite of all criticism, we have much too high an opinion of our experts for this. However, there does exist an unconscious prepossession which can have diverse bases -- a prepossession from which perhaps none of us is entirely free.

No matter who the consignor is, the expert should in no manner allow himself to be influenced by the identity of such.

The harsh judgment that Crepieux-Jamin (Grundlagen, German edition, page 74) made in regard to the French handwriting experts of his time is here in no way applicable. With respect to these experts, he said, "If they are summoned by the plaintiff, they consider themselves duty-bound to indict; if they are summoned by the defense, they plead the cause of the latter."

The handwriting expert should neither allow himself to be influenced by the contents of the documents in question or the result of the hearing of witnesses in the pleading. With respect to the foregoing, solely of importance to the expert is that which concerns the script or can be essential for the latter, e. g., its origin, the condition of the health of the testator at the time of drawing up the will, the level of education of the writer, etc -- but nothing else. If it is also important that he know the entire milieu, in order to be able to form a picture of the psychical or outward situation, he must in no case allow himself to form a pre-opinion from avowals or disavowals of the defendant or from incriminating or exonerating testimony which could also be an influencing factor, if unconsciously. Keeping him from such preopiniation could be the simple consideration of the fact that the suspect could be the abettor, rather than the perpetrator, of the falsification of a document, as is of course occasionally also the case. For, in spite of perhaps the most serious charges placed in the official inquiry, the latter may nevertheless not be the writer of the factual script. On the other hand, even though the entire contents of the document speak in his favor, the defendant can nevertheless be the perpetrator. In this case the comparison of handwriting should convict him, and at the same time correct the incomplete or erroneous result of the inquiry. In general, the expert should always

bear in mind that he is neither district attorney, nor counsel for the defense, nor agent of a party, nor judge, for that matter, but rather only an assistant of these latter -- an assistant who will be questioned only as to his expert opinion in regard to the scripts, not as to his opinion in regard to the result of the investigation. (Cf. here also, Schnickert, "The Expert and Suggestion" in Die Schrift [Handwriting], 1935, page 122 f.)

Neither should he allow himself to be influenced in noticing or assuming that the suspect attempts to disguise his handwriting in the taking of a handwriting sample. This he will encounter, be it through hints, be it in the more desirable manner of the taking of a rapid handwriting specimen. He must establish the fact, as such, and mention it in the opinion, but he must leave to the discretion of the court the evaluation of this fact. We have treated this in more detail in the discussion of the procurement of material.

In concluding the theme of prepossession, we have still to discuss a prepossession to which even the best expert can fall prey and against which even the most objective expert must battle, viz., the unconscious influence of an opinion gathered by himself during the preliminary examination of scripts. In the very case of a method such as the one represented here, which recommends the preliminary examination of the factual script and the script subject to identification in different directions, and in the case of which the analysis proceeds from the total form of the manuscript, it is necessary to point out the danger that the expert unintentionally and often unconsciously has already come to a preliminary judgment through such preliminary examination and observation. But this preliminary judgment must not become prepossession. The preliminary

examination and its often more intuitive result is certainly of some value. In many cases such result will confirm itself, and the expert will make note of this, wherever possible, with a brief argument therefor. Then, however, it must be placed *ad acta*, so to speak, and must no longer influence in any manner the further process of the investigation and above all the evaluation of characteristics. Only an analysis executed in a painfully exacting manner can produce a final, valid decision as to whether this preliminary judgment will be confirmed or repudiated "on the basis of new facts and evidence." Every experienced expert knows how often his initial opinion retreats in an opposite direction, when in the individual analysis he suddenly comes upon findings which speak unambiguously in favor of the opposite possibility. Therefore, under all circumstances, he must spare his final opinion until the last, after he has once again examined his preliminary opinion in the light of the findings of the investigation. This above all in those cases in which the preliminary judgment favored a confirmation of identity. The stronger the suspicion with respect to the handwriting of the perpetrator directed against the creator of the script subject to identification after the initial impression, the more cautiously must attention be given not only to concurring, but also to contradictory, characteristics in the undertaking of the analysis. Above all, it would be quite irresponsible if, as is unfortunately now and then still the case, one were simply to superficially designate those characteristics which are not in concordance with the preopinion as having been caused by falsification, without being capable of sufficiently establishing this assumption. As a preventive measure against a premature identification, we recommend that in the comparison

process the scripts of other suspects or other scripts in general be lain alongside each other. It will often prove astounding that other scripts -- often even the scripts of doubtless neutral persons -- manifest characteristics which are in concordance with the factual script, even though the latter script is entirely different from the others. Another practical counsel, in the execution of the analysis, is that of indicating on the one side of the note paper the incriminating characteristics, and on the other side those which speak against the identity of the writers. At the conclusion of the examination it will then become manifest on which side the only apparent or nonessential, and on which side the actual and indicative, concordances or nonconcordances appear. It is always the task of the expert, when he has come to the assumption of the identity or nonidentity of the creator of the script, to now once again subject to the magnifying glass those finds which speak against this final judgment -- in a figurative, and usually a literal, sense -- and then to clarify them in such manner that they can be brought into accord with the total result. This will then be the case if they can be ascertained as artificial fabrications of the disguised or copied script, stiffening phenomena due to an unaccustomed manner of writing, or as being conditioned by the school copy, etc.

If we are now to speak of the limitations induced by the material, then it is to be recalled that in the treatment of forgeries of wills we have already seen that handwriting refutes a number of criteria which we should have liked to gain therefrom. For example, from handwriting we cannot recognize the biological age of the writer, as little as we can diagnose with any degree of certainty the existence of certain diseases. In our statements above

we have treated this in more detail, and we refer the reader to the foregoing treatment. Neither is the sex of the writer manifest in his handwriting strokes. Employing a good formulation of Teillard, establishable is not the physiological sex of the writer, but merely, more or less, the psychological, i. e., the preponderance of masculine or feminine characteristics. However, as is known, there are effeminate men on the one hand and masculine women on the other. All these general limitations of graphology, at least in accordance with their present-day stand, have been outlined in classical manner by Klages in his short work Was die Graphologie nicht kann [Of That Which Graphology Is Incapable] (1949).

— We now proceed to the difficulties which can be entailed in the condition of the scripts to be compared -- difficulties which depend above all on their creator, i. e., the falsifier or the writer of the script subject to identification.

A great difficulty for the handwriting comparer -- a difficulty which is usually not given attention or is at least underestimated -- comes to light in those cases in which the character of the suspect is such a complicated one that only with great endeavor can the suspect be comprehended as a singular personality, for this will of course be reflected in his handwriting. To be found virtually in every person, and above all in our chaotic times, are inconsistencies and contradictions: "As a matter of fact, I am no book which has come into existence by subtle reasoning; I am a person with all his contradiction." And the creator of this verse, Conrad Ferdinand Meyer (Hutten's letzte tage [Hutten's Last Day]), has become for graphologists a scholastic example for the writer of a script which from the start is laden with inner contradictions and, consequently, incredibly subject to alternation. If, now, in such a

script the complexity, contradictoriness, and susceptibility to alternation leading to quite diverse stamps is carried so far that to be found herein is an irregular alternation of characteristics, a virtually unbounded multifariousness of expirations and directions of movement, a virtually unendless breadth of variation in all directions, then in the long run it may no longer be possible for the expert to know which characteristics of the script subject to identification he is to hold himself to in order to have solid standards for the comparison process. And in such a case we are confronted with the same limitations as are coped with an interpretive and -- above all -- comparative graphology. For, in those cases in which the creator of the script subject to identification is the perpetrator of the falsification of a document, this manifoldness will also be expressed in the factual script, as we have seen in the discussion of the alternation of characteristics, and here also this manifoldness will render difficult to an extraordinary degree the comprehension of fixed characteristics. Then it will often be scarcely possible to establish from the factual script which characteristics herein might be traced to the disguising and which might have been conditioned by the manifoldness of the natural script. Fortunately, such extremes, as all extreme cases, are rare. In general, in complicated scripts it will also be found that, under the entire alternation of characteristics, the basic handwriting characteristics will still have a certain uniformity and constancy. It is the task of the comparer to comprehend this, which often in the case of such scripts is of course just as difficult for the comparer as is the producing of a uniform character picture for interpretive graphologists. In the case of such scripts it should therefore be the task of the comparer to penetrate the deepest strata of the personality. Here,

above all, the total formation, to the extent it is comprehensible, and, in particular, its rhythms, condition of stroke, inner distribution of pressure, and such characteristics, will be decisive. One shall have to be very precautionous, of course, in assuming the certainty of results. On the other hand, it is a simple matter in those cases in which it is the script subject to identification which manifests this complicatedness, while on the other hand the disguised script appears unambiguous and monotonous. Here, one will be able to conclude with some certainty the personal identity of perpetrator and suspect. Such complicated characters will in general be less adaptable with respect to falsifications carried out by means of copying, since it will usually be difficult for them to persistently and unequivocally maintain and match a uniform style in the script being copied. Therefore, here frequent faux pas will crop up -- faux pas which are dangerous for every falsifier, as well as for the writer of a multifarious hand.

The inverse difficulty for identification -- a difficulty which in general is entirely underestimated as to its significance -- occurs in those cases in which a disguised handwriting approximates to an extreme the school copy, therefore having, as we have said, no longer any expressiveness, i. e., manifesting no individualistic expression. (Example of a script which conforms rather closely to the school copy: Figure III, left above.) This close dependence on the model can have two causes. The dependence on the school copy can be traced to unfamiliarity with writing or lacking agility herein, or it can be traced to a primitivity, perhaps infantility, of character. It is here a question of persons who are otherwise also usually dependent -- persons who proceed through life on the crutches of the school copy, so to speak, and who do not place enough trust in

themselves to produce individual writing strokes. We have already seen in the discussion of the school copy and its significance that it is impossible for any person to write in complete conformity with the model, and that even small ABC-learners form individually their letters or words, even though in a most moderate manner. It is a similar matter in the case of these awkwardly-writing or primitive persons. Be their deviations from the school copy which is drilled into them, so to speak, ever so coarse and unclever, it is just such characteristics which will become the more conspicuous in the monotonous, unindividualistic script totality. In the factual script, as well, such unclevernesses and coarsenesses will be pronounced and will reveal the perpetrator in the comparison process. In the main, such persons will scarcely be capable of cleverly-disguised handwriting, much less of copied handwriting which matches more or less the characteristics of the original script. It is a like matter in the case of falsifications. The second, and much more dangerous, possibility of falsification through close dependence on a writing model is the intentional copying of such by a clever forger. Such scripts are easily diagnosed as falsifications, but the unmasking of the perpetrator is often quite difficult. Fortunately, as has been emphasized several times, no falsifier is successful in writing for a longer duration in strict conformity to the school copy or some other model, without the appearance of reversions to his true handwriting. Thus, here, especially pre-cautious attention should be given faux pas, since also here such reversions to individuality must of necessity appear particularly conspicuous in contrast to the remaining totality of form which is monotonous because it is in conformity with the school copy. In the case of all scripts which approximate strongly the school copy,

the warning which has been constantly repeated by us should of course be given special attention, viz., that such concordances which could be traced to a common school copy should not be used in the identification process. As far as the certainty of the assumption of identity is concerned, here, if striking and conspicuous reversions are not in evidence, perhaps even more precaution is called for than in the case of complicated scripts. In the case of falsifications carried out by means of copying, dependence on the writing model has only little significance. It might merely be mentioned that such scripts are naturally easier to copy than are very individualistic scripts. At any rate, it is often quite difficult, in the case of primitive scripts, to match exactly the course deviations from the model, which also here must of necessity come to light. In conclusion, it might be mentioned that we have here spoken of intentional or unintentional, unusually strong dependence on the school copy. The script of many persons who are bound by rule or tradition, which departs only little from the school copy, is still individualistic enough. Therefore, the foregoing does not here apply.

We now come to a group of scripts which in actuality lead us close to the boundaries of the possibility of an efficaciously successful comparison of handwriting -- a group which in fact sometimes lies beyond such possibility. It is not those falsifiers who employ the cleverest technical means who are the most dangerous; on the contrary, it is those persons whom we can designate as slippery as an eel, so to speak, superficial, boundlessly nimble -- persons of Proteus-like or chameleon-like natures. These are then those who can transform their demeanor to their own liking, who take

nothing seriously, who are inwardly not really moved by anything, who therefore can adjust to their environment advantageously and in the manner which best suits them. Accordingly, such persons will produce an indefinite, smooth, characterless script which is capable of transformation at will. Therefore, they will also find it easiest to place themselves in the role of another and play the other in a credible manner, so to speak, in the disguising of handwriting or the copying and forging of foreign scripts, be it whether their intention is to conceal their own person in forging, as in the case of disguising, or to feign another, as in copying or falsifying. These then are those capable actors of whom we spoke in the discussion of the psychology of the handwriting forger. They will be the most difficultly "grasped" in the comparison process with respect to certain fixed characteristics, be it in their style of disguising, be it in their art of imitation. Likewise, in the case of such persons, reversions will be relatively rare. Coming from this category of persons are the intuitive writers who were mentioned earlier and the handwriting artists who appear repeatedly in the graphological literature, if scarcely in the forensic practice -- handwriting artists who have already become virtual legends. Here also it can fortunately be established that, just as actors of the order of Kainz or Bassermann appear only rarely, these first-class actors in the field of the falsification of handwriting are only sparsely seeded, as it were. In the case of these extreme cases of the comparison process, there remains nothing for the handwriting expert to do but attempt to penetrate through the script into the deeper strata of such personalities, for in the long run even the most superficial persons must somewhere have at least a relative depth in which is expressed their individuality. That which

should principally be given attention from a graphological viewpoint has been indicated above in the discussion of particularly complicated handwritings. To speak of a certainty of the result of comparison in the case of such scripts, which, as has been said, occur rarely, would as a rule, in our opinion, be presumptuousness.

Also scarcely comparable are "cramped" handwritings (cf. here, Pophal, Spannungserscheinungen [Phenomena of Tension], in particular pages 54, 114 f., and the accompanying Figure 5 and 5a). However, since these play only an insignificant role in the forensic identification of handwriting, only a brief reference will be made thereto. In the case of excessive stiffening, which as we know can occur in every falsification, inappropriate disinhibition can lead to a so-called dyskinesia, i. e., a complete impairment of the writing movement, which can make the writing picture so chaotic that an unsteady fluctuation of all script elements -- above all, with respect to position, size, pressure, unity, breadth, and execution of line -- occurs, as well as a dissolution of connecting form extending to the most serious disturbances of coordination and rhythm and to the dissolution and destruction of form. Falsifications can result in such cramping at times, perhaps due to the psychical or physical incapability of the perpetrator to "draw himself together" in a more or less pertinent manner, perhaps due to a state of overexcitement in falsifying or other reasons. It would indeed be impossible to recognize the natural handwriting of the forger in such a factual script. But here, as a rule the forger will himself notice that his disguise or copy is unsuccessful. Therefore, he will not be satisfied with it, since every handwriting disguiser or copier, as has been shown by experience, sets as his goal the delivery of a falsification product which is as "beautiful"

as is at all possible. Accordingly, he will not make use of such an unsuccessful fabrication. Since on the other hand cramped scripts, as scripts subject to identification, do not in the main come into question, we shall scarcely ever encounter cramping in the forensic practice.

Often difficult, due to the small compass of the factual script, is comparison in the case of "falsifications" in the sense of Article 267 of the penal code, i. e., the alteration of a genuine document by the addition of words, letters, ciphers, or by alterations or removal of such. Here, our method often cannot find full application, for the vital form or rhythm of such small writing strokes can of course usually not be accounted for, since they are usually unrecognizable. However, even here, we are often not limited to a pure comparison of form. In those cases in which for example entire words or letter groups are inserted by the falsifier, often a certain writing movement will be in evidence. Often we shall at least be able to pursue the movement stroke in accordance with type, direction, and intensity, and this even in those cases in which it is a question only of individual letters or ciphers or even only parts of such. In these cases which in the practice are in actuality not so rare, we can often draw quite definite conclusions on the unfalsified script of the perpetrator and, therewith, on the perpetrator himself, if the insertion manifests individual peculiarities. Of course the slight compass of the writing strokes produced by the perpetrator reduces to a strong degree the possibility of herein finding faux pas. Accordingly, only rarely shall we come to a certain identification.

Sometimes of further assistance to us in the examination of

forged additions[®] is the determination of the type or age of the ink of the text and the addition itself in the manner described above, as can be the establishment of the intercrossing of various strokes and the condition of the ink at these points, or the establishment of folds in the paper -- details which we cannot treat in more detail here.

In the case of the complete effacement of the constituents of a script for purposes of deceit we can of course only establish this fact, since there is naturally nothing left which could be compared. However, there are cases in which it is possible by means of certain special processes to again make the effacement so visible that it can still be used in the comparison process. For example, the Federal criminal court employs a so-called "picture transformer" which, under certain circumstances, makes it possible to still recognize many strokes which are otherwise no longer visible, e. g., erased strokes. This occurs in such manner that in the apparatus the infrared rays which are reflected from the object are transformed from a wave length invisible to the eye to a wave length which is visible.

Still, it is our viewpoint that these cases of falsification are not as hopeless as they often appear at first glance. Of course their potentially-successful undertaking presupposes especial know-how and a great deal of experience on the part of the examining handwriting expert. Therefore, it can only be recommended to the authorities that solely especially qualified experts be employed for such difficult comparisons, which, however, are by no means invariably devoid of prospective success.

If now, in conclusion, we are to turn to those cases in which

the possibility or the certainty of the comparison is questionable or limited, due to the special type of falsification, it should be remarked in advance that we have already discussed a part of these cases. For example, we have already established that in the case of the false production of documents by means of the arrangement of letters or words of the genuine manuscript into another deceitful arrangement, and in the case of many tracings, only the fact of the falsification, as such, but usually not the person of the falsifier, can be determined. Moreover, in the case of such increased difficulty or limitation of the comparison of script it is a question of the specific manner of proceeding of the falsifier under the specific circumstances. Here the choice of writing material plays a role.

However, the influence of the condition of the writing tool and paper is in general overestimated. Such falsification means are by no means dangerous, in relation to such a method as the one here represented, which, we think, takes into consideration all graphological possibilities of the comparison of handwriting. Proving most unpleasant is the choice of a writing tool which renders difficult or impossible the examination of the condition of strokes. Therefore, the so-called ball-point pens which are so popular today represent a crux of graphology. In the case of such a pen an individual pressure and a peculiar rhythm of pressure, and therefore the establishment of such, are quite impossible. The type of outflow of the ink makes rather illusory the successful investigation of the tension and intensity of the stroke. Accordingly, this writing tool actually deprives us of a quite important type of comparison, viz., the analysis of stroke. But fortunately this is only a small part of the possibilities which are afforded by the method; there still remain for us the examination of the movement,

space, and form picture, which is thereby affected in no way worth mentioning, not to mention faux pas. The same, if to a lesser degree, applies to the choice of a pencil or colored pencil instead of a pen. Here, particularly the investigation of stroke margins is made impossible, and the details of the distribution of pressure are scarcely establishable. The choice of a more pointed or broader pen or a manner of holding the pen which is different than usual -- circumstances upon which we must reckon in virtually every falsification -- or the choice of a different type of paper represent in general no particular difficulty for the comparer, for he makes allowance for these circumstances and it is possible to estimate rather accurately the influence of such alterations. We have touched upon this theme in the discussion of the stroke. Thus, such small stratagems of the falsifier do not ever really lead us to the bounds of the possibilities of comparison, even though they sometimes render somewhat difficult our work.

The judge or district attorney who, along with us, has paced off the boundaries which are also drawn for the forensic identification of handwriting, and who has become acquainted with all the subjective and objective sources of error and difficulties entailed in the comparison process, will understand even better in the future why the opinions of efficient and careful handwriting experts are sometimes drawn up so precariously in the final, valid judgment. Now, at the conclusion of our observations and in consideration of their total result, we can also treat of the question as to the relative certainty afforded in the judgment of the findings of a comparative analysis of handwriting -- a question in which the forensic practice has always had particular interest and which in

actuality is of the greatest importance for this practice. Hereby, it is a question of when and to what extent within the bounds set forth by us the personal identity of the creator of a factual script and the writer of the script subject to identification, i. e., the suspect, can be established or concluded with full certainty on the basis of the results of the comparison of handwriting. Courts of course have the greatest interest in such a certainty of the results contained in the opinion principally in those cases in which the confirmation of the identity of the writers comes into question, since only an opinion drawn up with some degree of certainty can serve as the basis for the sentencing of a person. Considerable uncertainty as to this point, in penal cases, will lead to discontinuation of the process or to acquittal, in accordance with the well-known principle of "in dubio pro reo"; in civil cases such uncertainty will lead to dismissal of the complaint for want of sufficient establishment of the claim, in correspondence with the similar basic principle that doubt is employed in the disfavor of the plaintiff. Therefore, in general the court will be in such position that it can commence a process only with certain results contained in an opinion, be such in a positive or negative sense. On the other hand, the handwriting expert -- at least the responsible expert -- finds himself between Scylla and Charybdis in those frequent cases in which doubt is possible. If he judges too scrupulously and cautiously, there then arises the danger that a guilty person may escape his just punishment or that a complaint which in itself is perhaps justified may be dismissed. On the other hand, if the expert is too resolute and sure of himself and accordingly confirms the identity too hastily or on the basis of an insufficient establishment, then the much more dreadful danger hovers that on the basis of this perhaps inapplicable opinion an innocent person is

indicted or even arrested or sentenced. It appears to us that the first possibility, i. e., exaggerated precaution and the awareness of responsibility, is decidedly the lesser evil. Technical journals and, recently, illustrated periodicals and newspapers, repeatedly advance examples of erroneous decisions on the basis of false opinions on handwritings. Certainly one will be able to take exception to the foregoing in that the number of such erroneous decisions is not large in comparison to the enormous quantity of sentences which are passed daily, in that certainly at least relatively as many such deplorable cases occur on the basis of other opinions which do not concern the comparison of handwriting, and in that erroneous decisions in general can never be entirely avoided. But all this does not release in any way the handwriting expert from his duty of undertaking with quite especial care, in consideration of the possibility of such faulty opinions, his comparison process, of drawing with the greatest circumspection the sum total from the findings of the analysis, of establishing in detail his thereby-gained conviction, of proceeding too cautiously rather than too unprecautiously in those cases in which doubt is entailed, especially if it is a question of confirming the personal identity of perpetrator and suspect. If, in a doubtful case, no certainty in a negative or positive sense is obtainable, then there is nothing for the expert to do but be satisfied with likelihoods, and the court must manage therewith. The court cannot commence much of anything with such an opinion, since the evil of an unjust sentencing could result. But a probability, even though only slight, in accordance with the one or the other direction, can still serve the support of evidence otherwise obtained.

If we are to bear in mind the total result of our investigation and the bounds within which comparative graphology is also confined, then we should strike out from the vocabulary of the

comparison of handwriting a word which is only too eagerly employed by most handwriting experts in the formulation of their opinions, viz., the "absolute" certainty with which an identity is assumed. Disregarding entirely the fact that this word "absolute" is used elsewhere, e. g., in metaphysics, in a quite different sense, we must repeatedly emphasize that graphology and, therewith, the identification of handwriting, as well, is no exact science in the sense of a natural science and that, in accordance with the methods possible today, neither can it now be or become such. Therefore, neither will it be able to represent in fixed figures its results, as is possible, for example, in the case of mathematics. Moreover, it shares this fate with the practice, i. e., the application, of almost every other science, in particular with all that which we have designated above as art. One need only recollect the medical arts, e. g., psychiatry, which borders on psychology, in the case of which former there can be no designation of exactness, since here faulty diagnoses can just as easily occur. If, then, we must manage in spite of the fact that an "absolute" certainty of result is not obtainable in the forensic identification of handwriting, as well, it must on the other hand be stressed that neither is this necessary in accordance with the entire formation of our process. "To prove" signifies only the establishment of a full conviction on the part of the judge.

"More cannot be attained in a process in the case of which it is a question of the clarification of historical processes. The insufficiency of the means which are available to us for the purpose of conducting a research investigation on the past, and the infallibility of man with respect to faculties of perception based on experience bring about the condition whereby we are never able to establish the accompanying circumstances of actual events with the absolute certainty which is possible and necessary in the case of the so-called logical proof of scientific propositions, viz., in mathematics" (Rosenberg, Lehrbuch des Zivilprozessrechts [Textbook of the Law of the Civil Process]. Note 2 to Article 111 and the there-advanced jurisdiction of the imperial court. These principles also apply to the criminal procedure).

However, the forensic identification of handwriting is quite capable of advancing in very many cases such proof, which in this sense is suitable for establishing a full conviction on the part of the judge -- such which, in itself, in the absence of other evidence is indeed sufficient in a positive sense as well, for the establishment of the personal identity of perpetrator and suspect. However, before we go into the requirements of such evidence from a graphological standpoint, we should first point out a demand which is made with respect to such evidence, not infrequently completely without justification.

Representative of a complete exaggeration of the requirements for the production of proof by means of the forensic identification of handwriting are those cases in which it is demanded that the concordance of comparative characteristics be "complete," in order that the certain assumption of an identity be established -- a viewpoint from which many judges and even many experts consciously or unconsciously proceed. Such completion is impossible for two reasons. A case in which all characteristics in the script of a certain writer are always and everywhere in concordance does not occur even in one and the same piece of handwriting, to the extent that it has only one compass. As we have established in detail in the section on the alternation of characteristics, every individual, therefore animatedly-flowing, manuscript manifests constant, i. e., repeatedly recurring and consistent script characteristics. Moreover, many of them more or less alternate, the one now appearing, now the other; or they overlap. If, however, characteristics alternate in this manner in the undisguised and uninfluenced script subject to identification, then this is all the more likely to occur in the falsified script, i. e., the factual script, for characteristics caused

by the disguising or copying now appear in addition to the natural alternation of handwriting characteristics. We have represented above how and to what extent this occurs; therefore, we here make reference to that representation. In the latter we have seen that the extent of this very possibility of the alternation of handwriting characteristics in an individual manuscript is the requirement which is constantly raised by us: not to count, but to evaluate these characteristics, in accordance with the fixed standards of our method. A concordance of psychologically or physiologically deeply-based characteristics appearing only sporadically in both scripts is much more important than is the frequent or constant intercorresponding appearance of handwriting characteristics which could, for example, be traced to a common school copy.

Thus, in general the certainty of the judgment does not depend on the completion of concordances or even of contradictions in characteristics, but on the value and importance that the intercorresponding or intercontradictory characteristics have for the comparison process. Likewise in accordance with these viewpoints depends the degree of certainty that we can attain in the judgment of the results of the investigation. Therefore, if those handwriting characteristics which we have previously designated as especially indicative, principally in our fifth basic principle, are in correspondence or contradiction in the factual script and the script subject to identification, then the expert can assuredly designate as certain his evidence. And in the case of the so-found results there is the highest degree of probability which is suitable for establishing a complete conviction on the part of the judge with respect to the guilt or innocence of the suspect. In other words, evidence is produced which is equal in value to every other fully valid evidence of guilt, or innocence. Self-evidently, the most

rigid requirements must be placed on the decision and the establishment of such certainty, above all in those cases in which it is a question of the assumption of the identity of perpetrator and suspect. Therefore, to the extent this is at all possible, all subjective and objective sources of error of the above-described type must be eliminated. There must be -- to repeat it once again -- concordance or contradiction above all with respect to the vital form and total form of the manuscript, to the extent such are comprehensible, as well as the essential characteristics of the stroke picture, and, further, those of the execution of movement, the rhythms of position, size, pressure, etc., general writing tendencies, and, finally, physiologically-based characteristics, to the extent such are perceptible. Furthermore, there must be present no characteristics which are contradictory to this result, which cannot be explicable as having been freely caused directly or indirectly by the falsification or as contradictions based in the character itself. In addition, it could still be demanded that the expert have a clear perception as to the manner in which the perpetrator has proceeded in this case in his falsification, if the compass of the factual script permits such establishment. Only in the presence of these presuppositions should one speak of a certainty of result. The formulation "with a probability bordering on certainty," preferred for good reason not only by handwriting experts but by many other experts, signifies nothing essentially different than certainty in the practical sense. It can further be seen that this signifies nothing else but certainty from the emphatic observation of the fact that, just as is otherwise the case in ordinary life, whereby everything can be judged only after the empirical observation of the course of things and after their natural expiration -- and here, error is never completely excluded -- so in the case of judgments on the basis of a comparison of handwriting, exactly as in every other advancement of evidence, the more or less theoretical possibility of error still

exists. Practically speaking, however, the latter must be regarded as completely unlikely, in accordance with the results of the science of graphology and the experiences of the forensic identification of handwriting. Thus, if the expert has attained an irreproachably established result, so that certainty or probability bordering on certainty exists in his judgment, on this basis the judge can unhesitatingly sustain a sentencing or the issuance of a warrant of arrest, or of course an acquittal or dismissal of the case. In our opinion, this would be justified even in a case in which the result of inquiry otherwise obtained does not unambiguously concur with the results contained in the opinion. It would then be such that, exceptionally, sometimes the quite decisive grounds of this evidence produced by the comparison of handwriting could invalidate other evidence.

If the expert arrives at his assumption "with the greatest probability," of course with a similarly careful establishment, then this also can render a sufficient basis for an arrest or sentencing. It could also be such that, in addition, in accordance with the result of the official inquiries or the main pleading very essential misgivings in opposition thereto may arise. The formulation "with great possibility," with respect to identity, will as a rule in itself scarcely suffice for an arrest or a sentencing. However, it would suffice for "sufficient doubt" in the legal sense, i. e., for official inquiry into a complaint or for the opening of the main process. If great probability speaks in disfavor of the identity, then this suffices for discontinuance or desistance from the opening of the main proceedings, or for the release of the accused. In the civil process the same principles apply to condemnation or dismissal of the case. In general, a mere probability will suffice for the establishment of a positive decision only in those cases in which a "credibility" in the legal sense suffices. However, such an opinion, as has been said, leaving out of consideration

such cases, can still form a valuable supplementary support with respect to other evidence procured, or it can call into question the value of such. In all cases it will be a sufficient basis for the preparation and execution of investigations undertaken by the police or the district attorney.

In this connection, we shall here advance two additional observations. In the statements on the limitations of the comparison of handwriting we have in each case indicated when certainty is as a rule not attainable and when especial precaution with respect to judgment is called for. It will become manifest how important these indications are after it has been seen to what diverse legal consequences, practically speaking, it can come, whether one can assume as certain an opinion, and the degree of probability attainable. Secondly, however, the following should be taken into consideration, and at the conclusion of our statements, we therewith once again come back to their main viewpoint. If we have previously said that the judge can rely on this result in the case of such certainty or high probability of judgment, and can thereupon unhesitatingly sustain his decision, then this has only one sense under the self-evident presupposition that he can rely on the expert who issued this opinion. The gist of the matter is that there be available to the administration of justice experts who in every respect are worthy of the trust of the judge.

In the eternal running match between the criminal and the battle of the state against crime, under all circumstances the state must have a secure head start, if an efficacious legal order is to be assured. However, at the present time this is unfortunately the case only to a limited extent in the field of the falsification of documents. The existence of this book can be traced to the endeavor to again assure for the executive power of the state the upper hand in this matter, and at the same time to eradicate as far as possible the danger of juristic errors in this domain.

APPENDIX A. THE FORMULATION OF OPINIONS

We consider unsuitable the listing of generally-binding regulations for the drawing up of comparison opinions. Just as there are no fixed formulae for the drawing up of the establishments of decisions because each legal case is somewhat different and, for that matter, the decision is each time to be established somewhat differently, so it is in the case of handwriting opinions and their compilation. But exactly as conformity to individual rules for the establishment of judgments is unavoidable, e. g., the division into the facts of a case and the reasons, so must there be some minimum requirements for the drawing up of comparison opinions. These requirements will be here represented. In addition, however, in the following the attempt is made, with respect to that which must be unconditionally observed, to give some counsel to the handwriting expert on the basis of that which has been authenticated in this field in the experience of many years. Therefore, in Appendix C, on the basis of an executed comparative analysis, an example of an opinion will be given which shows how we would imagine such an analysis in accordance with our method, and the representation of its process and result. However, in no way is this example intended as a mold, the arrangement and drawing up of which could be undertaken in all cases, for, as we have said, every case is somewhat different. It should also be openly admitted that even this case could perhaps be "grasped" and represented in some other manner. In general, in our opinion it should be left entirely to the discretion of each expert how he shall establish his opinions, disregarding the minimum requirements to be represented below. Finally, every expert has his own style, and the more efficient the expert, the more original the style. It would therefore be an injustice to limit herein the freedom of the handwriting expert.

One of the requirements which are unconditionally to be fulfilled is that the writing material used by the expert be specified exactly

and clearly at the top of the opinion and, wherever possible, that it be separated into factual script, genuine scripts, and suspected scripts as scripts subject to identification, the latter in turn separated into neutral scripts and handwriting specimens taken ad hoc. Often recommendable is an indication of the writing tool employed, e. g., pencil, pen, or ball-point pen. It is likewise recommendable that the pages of documents or envelopes be indicated, so that the scripts used may easily be found.

In accordance with our experiences, it is best, after the enumeration of the material, to immediately place at the top the result of the opinion, and with the briefest, clearest, most unambiguous sentences possible. Above all, it must unambiguously be indicated whether the existence of a falsification and the identity of perpetrator and suspect is assumed, and whether this opinion is rendered with certainty or with probability, and with what degree of probability. If the result is placed at the beginning of the opinion, the judge or district attorney has the opportunity to at once form a picture in the reading of the opinion. He will then be able to better and undisturbedly follow the establishment. In those cases in which one of several suspects can be designated as perpetrator only with probability, under certain circumstances it is recommendable that it be expressly indicated whether, disregarding this result, one of the others could still come into question as perpetrator.

Even though the type of establishment of the opinion should be left to the discretion of the expert, it must nevertheless be demanded of these statements that they be clear and synoptical. For example, it should always be clear which of the scripts is being referred to, the characterization of the individual scripts and their comparison with the others should be kept separate in the representation, etc.

In the interest of the clarity and logical consequence of the opinion, it will be recommendable to choose a certain succession of representation in accordance with some principle, the choice of which succession will depend on the peculiarity of the case in question. Thus, in general one will prefer such a succession which places in the foreground those viewpoints from which the handwriting characteristics which the expert considers decisive for the identification become manifest, e. g., the observation of the movement picture or the examination of the factual script for the ascertainment of faux pas, and the like. Likewise, in the establishment the expert should avoid limiting himself to details, but should instead always attempt to draw into greater interconnection the individual characteristics and to make an observation from a general point of view, e. g., he should evaluate and represent rolling movements, small back-stroke hooks, or rearward-trending loops, not only separately, but together as characteristics of a general tendency toward leftward trend. It shall have become clear to every reader of our book that neither in the establishment of the opinion does one begin with a representation of the comparison of letters or get caught on such, so to speak.

Of course in the main it will appear suitable to us to also recommend for the establishment of opinions the method, developed in the present work, of proceeding from the most general graphological viewpoints and then gradually proceeding downward to the individual characteristics, to the extent that the special formation of the individual case does not justify an exception. Likewise, in the interest of the clarity and definitiveness of the establishment, in general it will be recommendable to first begin the representation with the general impression given by a script, e. g., in the case of the factual script, whether it appears strongly or little disguised; in the case of the script subject to identification, whether it reveals dexterity

in handwriting and intellectual maneuverability, and the like. From the general impression one then comes more or less obligatorily to a more concrete comprehension of the total form of scripts and their comparison, and the further representation then best follows the way which our methodical analysis also takes, viz., after the determination of possible faux pas and the observation of the script elements stroke and pressure, the delineation and comparison of writing movement, the filling in of space, and the stamping of form. Thereby, in the representation these individual phases of the analysis, as in the case of the analysis itself, can of course not always be kept rigidly separate, since they are partially inseparable, as are the faux pas of forgers and the therefrom concludable total form of the script of that forger, or the writing movement and the consequent expansion of space, and the like.

It is particularly important that it be clearly pronounced in the opinion which handwriting characteristics the expert regards as original in the factual script and as belonging to the natural hand of the forger, as well as principally coming into question for the comparison process, and those which he regards as necessarily arising from the artificiality of the falsification and therefore not coming into question for the comparison with the script of the suspect. For only in this way can we form a picture as to the appearance of the true handwriting of the falsifier and as to whether the suspect could be the creator thereof.

Herewith, we have come to the more extensive requirement which must be made of every comparison opinion which is worthy of the name, viz., it must unconditionally be manifest from the establishment how the expert evaluates in their significance for the identification the individual characteristics found by him in the

various scripts in the comparison process, be they intercorresponding or intercontradictory. Thus, not only must it be clearly stated whether, in itself, a characteristic used in the establishment of the opinion speaks for or against the identity of the writer or for or against the genuineness, but this characteristic must also be accurately balanced with respect to its indicative value for this decision. For example, it must expressly be indicated whether it could be traced to a common school copy and therefore bespeaks little; or in the other case it must be established that it should be regarded as especially characteristic of this specific writer, and why, so that it be appropriately evaluated for the identification.

It is also emphatically to be recommended that in the case of an opinion which confirms the identity of the writers or the genuineness the refuting moments also be advanced and demonstrated, and in the case of an opinion which denies such identity or genuineness the substantiating moments likewise be advanced and demonstrated, in each case to show cause why the weight of such moments is not so decisive that it could shatter the point of view represented in the opinion. For an opinion will be deserving of the necessary trust only when it becomes manifest in its establishment that the expert has earnestly conducted an analysis even in the presence of some misgivings.

Often difficult to answer will be the question as to the extent the handwriting expert should engage in a discussion of the scripts of other suspects in the establishment of his opinion, if, in the presence of several suspects, the expert has decided to consider one of them as the perpetrator. If this opinion can be pronounced with certainty, then a detailed discussion of the other scripts will no longer be necessary. It will then be such that

one of these scripts is very similar to that of the perpetrator. However, the lesser the established degree of probability with respect to the perpetration of the one, and the greater the correspondences of characteristics in the handscripts of the others with the first, the more carefully must these handscripts be examined and the more detailedly must they be discussed in the establishment of the opinion.

Finally, as far as the compass of opinions is concerned, here there exists for the expert a double danger.

The one -- and, to be sure, most serious -- error that unfortunately not a few experts commit is that of being content with generally constrained and succinct judgments and statements without discussing in sufficient detail the quite special circumstances of the specific case and, above all, the concrete handwriting characteristics which are here decisive. This is especially serious in those cases in which these often quite superficial and hasty assertions are embellished with a few scientific-sounding turns of speech or graphological technical terms the purpose of which is to delude the layman, i. e., here, principally the judge. But, unfortunately, often enough these additional terms delusively conceal how little substantiated and subjectively arbitrary the presumably established assertions really are.

It has even been our experience to have observed that a mere comparison of photographically-copied and enlarged letters from the factual script and the script subject to identification has been designated an "opinion." In this case every word of criticism is superfluous.

If these handwriting experts do too little, there are also those who do too much to the good. Either they enlarge too detailedly

upon their findings, making the opinion too garrulous and, under certain circumstances, tedious. Or they overload their opinion with details which are not necessary for its establishment. There is then manifest a pretentiousness, i. e., an unnecessary and exaggerated carefulness and exactness. In this case there exists the danger that one is diverted from the gist of the matter by the abundance of detail, or that which is really essential is no longer sufficiently in evidence.

The ideal opinion should contain everything essential to the fullest degree possible, but only this, and in a rigid condensation, synoptically grouped, and wherever possible, arranged and developed in a logical succession. The drawing up of an opinion in such manner is not easy and requires deliberation, effort, and time, as well.

APPENDIX B. DISCUSSION OF THE FIGURES

This and the following appendix of this book appear to us to be of great importance for the complete training of handwriting experts. By means of selected examples, those who endeavor to really learn something and to further educate themselves will be shown upon what it principally depends in the individual case with respect to such scripts, what should particularly be given attention, and how one can best proceed in the given case in order to undertake a proper solution. Even though each case is somewhat different, nevertheless the decisive viewpoints always remain the same, and the expert learns through practice with the examples offered the type of their application, leaving entirely out of consideration the fact that, in detail, much is repeated in the various cases arising in the practice. Therefore, the examples of handwriting which we are here advancing have without exception been taken from

the daily practice of the forensic identification of handwriting. But neither have particularly difficult examples been chosen; rather, selection has occurred in accordance with the viewpoint that the most instructive examples possible be produced.

Self-evidently, it was impossible to herein exhaust even to the slightest degree the entire abundance of the forensic material which has formed the basis for our investigations. In addition to the question of costs, a limitation was entailed in the necessity of publishing, on the grounds of discretion, and as far as possible, only scripts from older cases which have long been closed, and of these, to the extent that they had a greater compass, only specimens with names and place-name designations suppressed. Permission was ~~obtained in all cases for this purpose.~~

But even this inextensive pictorial material may suffice, in the presence of proper evaluation in conjunction with the text of the discussions, to convey to the expert that which he should observe in order to then be able to further educate himself. Already previously the figures have more or less served as illustrations to our statements, for therefrom we have repeatedly drawn examples for rendering clearly manifest that which was meant in each individual case. It is now a question of the evaluation and discussion of the scripts pictured in the figures, as a whole. Of course, in general, it was only possible to suggest that which we consider most important. To have conducted an exacting analysis on all these scripts would have reached beyond the scope of this book. Therefore, we must be content with the advancing of a single example of a thusly-executed opinion in Appendix C, with respect to the specimens in Figure III, which seemed most suitable to us herefor.

Therefore, a great deal must remain for the industriousness of the learner himself.

Figure I

Reproduced in this Figure is the factual script of one of the many forgeries of documents, in this case the request for the delivery of a radio for fraudulent purposes. The many pencil strokes herein drawn by the expert are somewhat disturbing, but they are easily recognizable as such, to the extent that they have not effaced the reproduction.

By means of this example it is clearly manifest how important the position of letters can also be for identification. Hereby, as we have already seen, it is usually not a question of position, as such, which in disguised handwritings is almost invariably altered in relation to the natural script, be it intentionally, be it due to the stronger stiffening which occurs in the presence of forging. As a rule, and also in this case, it is much more a question of the rhythm of position, which, exactly as in the case of every other rhythm, depends on primordial and conscious movement and writing impulses. In these handscripts, i. e., in both the factual script and the comparison script, the date and salutation have been written vertically, after which there are several lines of predominantly slanting letters. From about the third line of text down there is a recurrence of vertical writing which is interrupted by some slanting letters (factual script: "Not"; comparison script: "Gruss Frau"). Then the signature in both specimens becomes quite vertical. Thus, we have here a case manifesting a quite unmistakable correspondence in the rhythm of position.

In addition, there is concordance in the distribution of pressure in the alternation between heavy pressure and sharp, thin strokes. There is also concordance in the manner of the filling of space in various aspects, e. g., principally the steplike formation of the closure of the letter. Connectedness and the execution

of lines, as a whole, principally in the spaces between words, are also in concordance, even though here the details do not always concur, due to the diversity of the writing system, which also often influences connectedness.

We cannot here go into more detail with respect to other correspondences of the form picture. However, it might be mentioned that the concordances of forms are above all manifest in a comparison of the Latin-style letters of the comparison script which is otherwise written in German-style letters, e. g., the h, R, d, etc. Unfortunately, a Latin-style handwriting specimen was not available.

The concordances in the movement, space, and form picture confirm the finding which the observation of the rhythm of position has already rendered. All told, the assumption of that time of the identity of the writers justifies a probability bordering on certainty, although it must be recognized that the forgery has succeeded well.

(In addition, compare principally the chapter on the rhythm of handwriting and its manifestations and on the space picture.)

Figure II

The section of a postcard illustrated above in this figure, which played a role in a divorce case, and the comparison script of the suspect illustrated therebelow, were both written in pencil. This case can serve as an example of the innumerable anonymous writings which form the daily bread, so to speak of the forensic identification of handwriting.

The principal reason why this was chosen from the abundance of material is that in these scripts, leaving out of consideration their concordance in basic elements, it can be seen how at times the alternation in the appearance of similar characteristics, rather

than the concordance of characteristics, can be decisive, to the extent that this fluctuation of characteristics in the factual script and the comparison script occurs in exactly the same manner, since then it reveals one and the same rhythm of the personal writing expression.

The concordance in the basic elements exists above all in the condition of stroke, e. g., the smoothness of the stroke margins, which is considerable for a penciled script, and the existing, but not always maintained, tension of stroke. If manifest herein is a certain fluctuation, this applies particularly to the distribution of pressure which fluctuates between strong to excessively strong and abating to barely existent pressure, and a similarly irregular displacement of pressure principally in the upstrokes of lower loops after fine downstrokes (e. g., factual script, line 6: "schon"; comparison script, line 9: "abgeben"). Also further corresponding in both scripts is the alternation in the connecting form of diversely-formed arcades, on the one side toward an angle, on the other toward a double arch. Also characteristic is the alternation between narrow script and sudden broad strokes (factual script, line 9: "maske" between the m and a; comparison script, line 2: "endlich" between the e and n), as is the contrast between broadly out-swinging and thinly outward-trending out-strokes. Similar fluctuations are establishable in the interrelationship of lower strokes and upper strokes, e. g., factual script, line 8: "Threr"; suspected script, line 11: "seelischen." Also appearing in both scripts are not regular, but sporadic, sprawling strokes in downstrokes, principally in the case of n and m at the ends of words. The upper signs, the direct concordance of which is conspicuous in the leftward trend of u-curves and the formation of double strokes, in turn alternate in quite definite manner in the forming of the i-dots which always appear either as especially fine dots or as "commas" directed leftward.

As far as direct concordances are concerned, we might here merely call attention to the small dots occurring at the inception of the commencing stroke which repeatedly appear in similar manner in both scripts.

Here, intentionally, we shall not go into the concordances of individual characteristics, since it was our aim to show that, under certain circumstances, a similarity of the fluctuations of the essential handwriting characteristics can so suggest the identity of the writer of the factual script and the comparison script, that therefrom one can draw a conclusion, with the presupposition, of course, that the analysis of the individual characteristics does not render any contrary finding.

— (In connection with this Figure, one should principally compare the chapter on the alternation of characteristics.)

Figure III

With respect to this Figure, compare the detailed analysis in Appendix C.

Figure IV

This Figure exemplarily shows how worthy it often is to draw a connecting line across the ends of downstrokes, and this in both the mid-zone and the lower zone, for the determination of the rhythm of size or line. This line, which was red in the original, can be recognized as a furrow on the grey base in the greatly-enlarged photograph. The factual script can be found above, the comparison script below.

If the lines had been drawn more precisely, the great degree to which the curves correspond in both scripts would be more clearly recognizable. However, in the present case, a line of connection

not only between the lower ends, but also between the upper ends, i. e., the peaks of the short letters would be appropriate. Anyone can complete this himself. Only by means of the foregoing is it possible to form a proper judgment with respect to the question of the distribution of the size of small letters, which is so important for the establishment of identity, and with respect to the rhythm of size in general. In our example it can at once be seen that the curves developed in this manner correspond throughout. Only the middle part of the word "gegan" need be pointed out. Here in both scripts the connecting line of peaks rises from the initial letter to the g and then vertically upward to the e, then softly descending again at the second g. At the a it rises once more and then descends again rather abruptly. This curve appears considerably more indicative than the one drawn by the expert. For example, observed as a whole, the line drawn at the base of the small letters does not bespeak a great deal, because such lines which are gently curved upward are to be found in very many scripts. On the other hand, the details of even this line are important, since it reflects well the fluctuations within the line. The line which connects the ends of the lower loops is characteristic for the interrelationships of the size of the latter -- interrelationships which almost always are important.

These concordances in the rhythm of size would render a quite considerable probability for the personal identity of the creator of both scripts, even though one would always have to be precautionous in the presence of such a small piece of handwriting. In the present case the further correspondences of the structure of stroke, connecting form, and formation, in regard to which we cannot here go into greater detail, would confirm this finding. Moreover, the identity of the writers assumed by the expert was here confirmed by the avowal of the accused.

(Compare principally the chapter on the space picture.)

Figure V

Shown in this Figure is the greatly-enlarged photograph of a genuine and a forged signature. Here, as has been proved, the lower specimen was traced from the genuine specimen above.

The fact that here a tracing is in evidence cannot at first glance be recognized, as this is in general at times difficultly established. Upon longer observation, of course, it becomes ever clearer that more actual "life" pulsates in the genuine manuscript above. Its regularity has quite fine fluctuations, above all in width and the execution of line. Likewise, the structure of stroke is more elastic and flexible in the genuine signature, whereas in the lower signature it is more rigid and inflexible. The above specimen is more flowing and has been more rapidly written than the lower. The lower specimen is somewhat stiff, which is easily recognizable in the out-strokes which are quite conspicuous in their deviation from the genuine script. In the genuine signature the out-stroke of the L is written upward with a quite peculiar displacement of pressure; on the other hand, in the lower signature it is drawn more to the right. The out-stroke of the r in the upper script appears more horizontal and rather thick; in the lower signature it is sharp, sword-shaped, and directed more upwardly.

By and large it can be established that the copier of the genuine signature has succeeded in no manner in grasping the rhythm and the type of movement stroke of his model, or in representing this in his forgery. This is manifest in the reproduction of directions of stroke which, for a tracing, have been matched quite poorly. Not even the position of letters corresponds to that of the genuine signature. Complete directional deviations can be seen, for example, in the commencing and finishing strokes of the

E and the r. The form of connection, as well, has in no way been properly matched. For example, below, in contrast to the genuine script, there are several sharp angles which can be seen in the l, n, and r. This can be traced to the fact that in general the pressure at the basis of letters was falsely distributed in the tracing. In the connections to the next letter the pressure often becomes course and increased: one need only compare the e, for example. In the connection of the n and the e the pen remained suspended during the tracing of the stroke, causing the conspicuous gap between the two letters. The commencing strokes also manifest a false distribution of pressure, e. g., principally the commencing stroke of the l. We have already represented in detail in the discussion of falsifications of signatures above that all these deviations, which are not too considerable, considered individually, gain increased importance in signatures and, as such, indicate much more in the text of a piece of handwriting.

In addition, neither does the space picture correspond here, inasmuch as the execution of line in the traced signature is different from that in the genuine. In the case of the genuine signature the end of the word rises, whereas in the case of the forgery the execution of line descends downward from the e.

In such cases as the one here represented it is usually rewarding to have strong enlargements of the factual script and the comparison script made, since in such even the smallest deviations of the one script from the other are much more pronounced than in the original. But, on the other hand, one should guard against overestimating such differences, above all if they are isolated deviations which cannot be brought into a greater interconnection, e. g., deviations of a certain execution of movement as here, or the like.

Such individual deviations would also not be too indicative in those cases in which they could lie within the breadth of variation of the forms of such a genuine manuscript. Therefore, one would still have to produce for the comparison process a handwriting specimen of a greater compass from the writer of the genuine manuscript.

As a whole, the present forgery, in spite of the expedient of the tracing, can be designated a quite unsuccessful fabrication, the unguineness of which can entail no doubt.

(Compare principally the chapters on the falsifications of signatures and on falsifications carried out by means of tracing.)

Figure VI

~~The Figure contains an example of a forged will~~ which played a role in peasant circles. The specimen above is the factual script; the specimen below is an undoubtedly genuine script of the testator. A script of the suspect was not available; it was thus a question only of the genuineness of the document.

At first glance it appears here to be a question of a quite course forgery which could at once be proved such. In actuality, however, it was not such a simple matter. It was made manifest from the documents that, in the period between the drawing up of the receipt, which serves as a comparison script and is pictured below, and that of the will, the state of health of the testator had worsened to such an extent that it was necessarily assumed that he was very ill at the time of the ostensible drawing up of the will.

As is so often the case in wills, the difficulty of the case lay in the decision as to the question whether the complete deviation of the script of the will from the original script of the testator might not have been caused by the hygienic disturbances which had occurred in the meantime.

That such disturbances are present is evident: one need only observe the unsteadinesses in the beginning of individual loops or upstrokes, or the d in the third line of the text. In the case of these disturbances of stroke and direction is it a question of such as could have been produced intentionally or of such as are inimitable and must consequently be genuine? Of these strokes, the downstroke of the T in "Testament" or the aforementioned d, for example, could have been produced intentionally. However, this is scarcely possible in the case of the other strokes, such as the not infrequent unsteadinesses in upstrokes and loops (e. g., n in "Kinder," r in "Elvira," g in "Engelina"). However, since the script of the actual writer of the will is unknown, the possibility must still be reckoned that his script could also manifest such disturbances.

Thus, from the signs of disturbances alone, a decision could not be made -- neither in the sense of probability in accordance with the one or the other direction.

Here also, it depended decisively on the result of the analysis of characteristics. In accordance with the latter, however, there can be no doubt but that the will cannot have been written by the testator.

Illness or frailty can indeed bring ataxia or unsteadiness into handwriting; it can even perhaps more or less dissolve its entire structure. However, such can never completely transform a script into another with the previous contradictory essential handwriting characteristics. The present script of the will, however, is completely different from the genuine script of the testator.

This manifests clearly the alteration of the stroke. It appears doubtful whether a transition of the stroke from piercing

sharpness to doughiness would be explicable by a hygienic fluctuation. This would be more plausible in the presence of a lesser tension of stroke. But the rhythm of pressure is so completely diverse that this diversity can no longer be explained by hygienic disturbances. One need only observe the frequent displacement of pressure toward the right, or the fine lower loops in the will, in contrast to the constant lower pressure and the course loop characteristics, often manifesting swelling pressure, in the receipt. Neither is the difference in the form of connection -- in the case of the testator, broad angles and angular festoons; in the will, "propped" angles with sharp points or angular arcades -- explicable by illness or weakness. Neither is the complete disconcordance in the form and the placing of upper signs. Connectedness is also fully different: ~~in the case of the testator frequent abrupt inter-~~ruptions are manifest, whereas the strongly tenacious connection of stroke in the will is strongly indicative of the artificiality of the writing, as is also the strongly stiffened out-strokes.

However, as is so often the case in wills, the differences in the signature appear decisive to us. Here, only the Christian name could be reproduced. It is quite unlikely that the testator, who has otherwise (in other handwriting specimens and in the surname) written with Latin-style initial letters and has invariably given the initial and final letter of the Christian name a characteristic loop, as in the receipt, should now suddenly write his initial and final letter in German-style and without loops in the will. Even if he had become ill and weak in the meantime, he would have held even more to the usual form of his signature.

We cannot here go into detail on the contradictions in the space picture and formation. We can only refer the reader to the execution of lines or the forms in the case of the f and a.

As a whole, the analysis of characteristics indicates with certainty the presence of a forgery.

This example thus shows us that, in spite of the appearance of disturbance characteristics in the will, which, in themselves, could have been caused by hygienic afflictions, the document can nevertheless be forged. It shows further that as a rule only the exacting analysis of characteristics can be decisive in this matter.

(Compare the chapters on the falsifications of wills and on the falsifications of signatures.)

APPENDIX C. EXAMPLE OF AN OPINION ON THE BASIS OF AN EXECUTED COMPARISON ANALYSIS

Prefatory Notice

In spite of its negative finding, the analysis of the scripts in Figure III was chosen as an example, because it permits showing the importance of the examination of the script of the forger for the ascertainment of his falsification capabilities, and of both scripts for the ascertainment of their vital form; the possibilities of a reconstruction of the forger's script from the factual script; and, finally, the peculiarities of a comparison of block scripts.

It is here a question of the preliminary proceedings of a prosecuting authority called into action due to three threatening letters which were directed against a certain person who was indeed later attacked. Suspected of the factual script were two youths who were members of a radical group, a political opponent of which was the threatened person. Here, only a part of one of the letters could be reproduced, viz., on the right in the Figure. The quite disturbing underlinings and the ciphers on the margin were produced

by the expert. Dictated handwriting specimens made by the two accused persons are reproduced above and below on the left side of the Figure. In the following the writer of the upper specimen will be designated Defendant A; the writer of the lower specimen Defendant B. The parts reproduced fully suffice for the execution of the analysis, since the lacking parts did not render anything new or of a different nature.

Exemplarily, the results of the comparison analysis were formulated as follows.

OPINION ON THE BASIS OF A GRAPHOLOGICAL COMPARISON OF HANDWRITING

A. Handwriting Material Submitted:

- I. Factual script: a threatening letter, printed and penciled, without date and signature.
- II. Dictated handwriting specimens of the accused, written in pencil.

1. Specimen of Defendant A (designated in the opinion as Specimen 1).
2. Specimen of Defendant B (designated in the opinion as Specimen 2).

B. Finding of the Opinion:

It can be assumed with certainty that neither Defendant A nor Defendant B is the writer of the threatening letter.

C. Establishment of the Opinion:

It is certain that in the case of the present factual script it is a question of a strongly disguised handwriting. The artificiality of the production is at once manifest in the strong stiffening, the obviously enforced regularity, the likewise unnatural unconnectedness, and in individual forms, e. g., the letters and words with double outlines (Lines 4 and 8).

As a whole, the factual script is predominated by a strong unrest, an only incompletely restrained violence and aggressiveness, a vital force which seeks and finds its outlet. These phenomena cannot be traced solely to the fact that the script was doubtless written under the influence of a strong affect (cf., for example, the greatly ascending d in Line 4, center). For, on the other hand, these forces are again restrained by a strong will which has impelled the exaggerated regularity of the handwriting toward an artificial script which is well-executed in spite of individual faux pas.

Nevertheless, we find a number of places in the factual script which deviate conspicuously from this uniform style of disguising. These are principally those parts of the script which appear uniform and less vertical, as well as, in general, less stiff. Here principally representative are the last word of Line 4, the first word of Line 5, the "tre" of the second word of Line 5, the words "ohne Ruecksicht" in Line 6, and the word "auf" in Line 7. All these deviations from the forging style are more or less natural and unconstrained, mutual in essentially corresponding handwriting characteristics. Therefore, they can unhesitatingly be regarded as reversions to the habitual handwriting of the perpetrator. Thus, in the comparison process, it is they which must be considered decisive.

The thusly-obvious script of the forger manifests itself as a cleverly-formed, expansive, strongly upward-trending, vital, spirited, well connected, somewhat rightward-slanting, more angular than arcade-shaped manuscript with rather ununiform pressure -- a manuscript which quite probably is predominantly written in German-style letters, as is suggested by the numerous German-style e's and t's, the German-style r on Line 5, and the German-style f on Line 7.

But also individual Latin-style forms, e. g., the open a and the e (with the small loop which is either drawn downward or is horizontal at its base), are so characteristic that it must be assumed that they belong to the natural handwriting of the perpetrator.

The conspicuous mirror-writing form (b instead of d) in Line 7 is certainly caused by the falsification.

II. Comparison of the Factual Script with Specimen 1

In contrast to the factual script, the handwriting of Defendant A appears quite inanimate, almost rigid, little expansive, of more or less good regularity. In spite of a rightward-trending movement stroke, there is no trace of a swing or outward-trend. Instead, we find indication of a certain weakness and inhibition, e. g., in the hesitant out-strokes, the small leftward-shrinking lower loops which are partially almost curtailed, and as detail in the almost anxiously rearward-drawn d of the "und" in Line 5. In spite of this, this script manifests a certain rigid maintenance in its concentratedness, its almost obdurate regularity, and its careful, almost pedantic, formation. Manifesting no grandioseness or maneuverability, it appears thoroughly static and rather amorphous. The insertion of the script into the writing space is also awkward. The difficulties which orthography has entailed for the writer indicate an indexterity in writing.

Under these circumstances, there immediately rises the question as to whether, in accordance with his writing capabilities, this defendant could be at all capable of a factual script of the present type, and this question must be answered in the negative. His handwriting is so fixed and ingrained that he would not be capable of producing such a grandiose, forcefully-formed script as the factual script, which is outward-trending in all directions.

In attempting to disguise his handwriting, this writer would certainly produce a careful, very regular forgery which would be more "painted" than written, if he were at all capable of a thorough alteration of his own quite rigid script.

Thus, if a comparison of the vital form of both scripts and of the capabilities of both writers does not bespeak their personal identity, a detailed comparison of the scripts fully confirms this finding.

Stroke and pressure are completely different. The defendant writes with a fine upstroke and a thick downstroke; occasionally the stroke becomes adhesive to a point of smeariness. In the case of the writer of the factual script there is usually little difference in thickness between upstroke and downstroke, but the script is permeated with sporadically-occurring places of strong impressedness -- everything in complete correspondence with the above-described vital form of both scripts.

Whereas the anonymous writer prefers the upward trend, the script of the suspect manifests a predominant rightward trend. The form of connection in the factual script consists mostly of arcades; in the case of the faux pas there is a preponderance of angular arcades with broad, somewhat sprawled angles. On the other hand, Defendant A very consistently writes quite pointed, mostly "propped" angles, the upper points of which not infrequently form the so-called shark's teeth. Likewise, the general formation of downstrokes is different, inasmuch as, in the case of the factual script, they tend toward convexness forward and to the right, while in the specimen they tend toward concaveness rearward and to the left. In spite of its rightward trend, the specimen is written narrowly; in spite of its upward trend, the factual script is written

broadly. The anonymous writer has the tendency of not always drawing the downstrokes completely down, e. g., i in Lines 1 and 7; u in Line 6; d in Line 10. This is not apparent in the case of the defendant; rather, he has the tendency of drawing upward entire final letters and then leaving them suspended (cf. the final n in "dann," Line 4; the final n in "folendeten," line 6).

The factual script -- above all in its "reversions" -- manifests a quite alternating size; on the other hand, the small letters of Specimen 1 have been drawn obdurately equally high. As mentioned, in the case of the defendant the lower loops are suspended toward the left; in the factual script they are drawn downward strongly vertically.

Due to the diversity of the script systems, the individual letter forms can be compared only with difficulty. Where this is possible, as in the case of the Latin-style letters of the specimen, they are quite different, e. g., the e (cf. Line 1: "letzten"; Line 6: "folendeten"); or in the case of the German-style letters of the factual script, the e, which is never split apart in the specimen, or the f, which has an end loop entirely different from that in the factual script, Line 7. In general, in the case of the defendant, the i-dots have been drawn rightward and have been set very low. In the factual script they are placed considerably higher and, almost invariably, drawn conspicuously downward and leftward.

The distribution of margin in the space picture is completely different. The factual script has an animatedly-alternating left margin; to the right, the impetuously forward-trending writing stroke often strikes against the edge of the paper. In the case of the defendant, the left margin forms a very straight vertical line, and the script, corresponding to the other indications of hesitancy which are to be found herein, avoids striking the right edge of the

paper -- sometimes almost anxiously. One could likewise advance as evidence the execution of lines, which in the case of the defendant is fluctuating but, as a whole, is pronouncedly curved and directed upward. On the other hand, in the case of the factual script such execution of lines is curved and descending.

In spite of the fact that the handwriting of the specimen and the handwriting of the forger (concludable from the factual script) are both rightward-trending and have been predominantly written German-style, it is a question of scripts which, in accordance with their total form and their individual characteristics, are so antithetic that it is impossible that they could have as their creator the same writer.

Any handwriting characteristics which could refute this finding are not in evidence. Therefore, it can be said with certainty that Defendant A did not write the threatening letter.

III. Comparison of the Factual Script with Specimen 2

Whereas in the case of Defendant A, the comparison of the total form of his script with the factual script -- particularly with respect to the faux pas of the forger herein -- sufficed for a decision on the identity of the writers in a negative sense, this is apparently different in the case of the handwriting of Defendant B. For, upon cursory observation, a certain general concordance of both scripts in the distribution of pressure and formation appears to exist.

However, upon the closer examination and comparison of both handwritings, this initial impression proves erroneous.

If a dynamic force of movement and of formation must be designated as characteristic of the forged script, on the other hand

the script of this defendant appears weak, inhibited, and awkward. In contrast to the taut and very secure stroke in the factual script and its fine, albeit strong, pressure, manifest in Specimen 2 is a rather impotent, insecure stroke which repeatedly becomes quite weak. The latter can be seen, on the one hand, in the slackness and insecurity of direction of the stroke, and in the frequently-lacking pressure, on the other. This uncertainty and weakness of the script of the suspect is likewise manifest -- still more conspicuously -- in the position of the script, which reveals a helpless fluctuation, whereas the disguised script maintains a very consistent vertical position, which becomes slanting only in the faux pas. Therefore, the extent to which the uncertainty of position on the part of the defendant can be traced to the restraint entailed in having to produce an uncustomary type of writing is of no importance for the finding of the comparison. This indexterity is moreover manifest in the uncertainties in the direction of the drawing of loops, as in Lines 2 and 10, as well as in the partially childlike formation principally of the majuscules, e. g., the D, and in the permutation of small letters and large letters, e. g., the l in Line 7 ("Platz"). The uncertainty is also revealed in the hesitant out-strokes, in contrast to the forceful stop-strokes of the factual script, or the straight and confident out-strokes of the r of the latter (e. g., Lines 8 and 9). One might also compare how weakly many letters of the specimen are formed, e. g., most of the s's.

Therefore, in the case of this defendant, it is a question of a little vital, uncertain, and indexterous writer who could scarcely be credited with the production of such a forceful, confident, and dexterous forged script as is represented by the present factual script. Moreover, this defendant does not possess the

strong concentration capability of the other, which must be regarded as the unconditional prerequisite for the execution of a consistent style of disguising. Here also, therefore, the comparison of the vital form of the scripts at once bespeaks against an identity of the writers.

In general, an execution of this analysis renders the same.

The form of connection at first appears to be rather corresponding, inasmuch as both writers prefer arcades. But, disregarding the fact that the perpetrator employs angular arcades in his natural hand, upon closer observation the arcades prove quite diverse in both scripts. In the factual script their downstroke is curved forward; on the other hand, Defendant B tends toward a light convexness of the downstroke of the arcade-leftward ~~and~~ rearward (cf. the first line of the specimen). Likewise, in the manner in which Defendant B forms his printed letters (or what he considers such), there is a great difference in relation to the factual script, inasmuch as, in the case of Defendant B, the downstrokes remain close or equally distant from each other at the base, as well as above, whereas the downstrokes of the factual script have a much broader base. One need only observe how, in the case of Defendant B, the n, m, a, and h are separated below. Likewise, the lower loops are diversely formed: in the specimen they are usually drawn downward loosely, while in the factual script they become hard and angularly-drawn, taut, and rather short hooks.

If, under these circumstances, it still appears necessary to go into individual letters, attention may exemplarily be called to the fully contradictory formation of the a, which is closed to a point of being "rolled-up" in the specimen, while it is invariably open in the factual script; to the e, which conforms to the school copy in the script of the defendant, while, as was shown above, it

is altered in the factual script; to the o's, which have a small knot above in the specimen; to the completely different f's, g's, and k's; and, finally, to the v and w, which are soft at the base in the case of the defendant, while they are very sharply angular in the case of the forger.

The distribution of space renders the same picture of diversity. In Specimen 2 the left margin is convex; in the factual script it forms a serpentine line. In the latter the right edge is touched by the script; in the former, in part the script comes close, in part keeps conspicuously distant (Lines 6 and 10). Here, in contrast to the factual script, the execution of lines is pronouncedly curved.

Likewise, in the case of this defendant, upon closer observation of his handwriting it is made manifest that it is of a completely different type than the factual script. With respect to this finding, we cannot be led astray by the fact that some letters appear to correspond, e. g., the d in "und" in Line 6 of the specimen with the d in "handeln" in Line 4 of the factual script, or the fact that the fluctuation in the direction of the drawing of loops is manifest in the b in Line 2 of the specimen (perhaps also in the b in Line 10), as well as in the d of "die" in Line 7 of the factual script. For, disregarding that such quite sporadic concordances in themselves generally bespeak little, here, for example, the first-mentioned d's have a somewhat corresponding stroke, but a different distribution of pressure and not the same sprawliness below as is manifest in the factual script. However, the backward drawing of loops in the specimen proceeds in an opposite direction in relation to that of the factual script.

Therefore, neither in the case of Defendant B can there be any doubt but that he is not the writer of the factual script.

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